

AD-A172 286

STATUS REPORT ON MEDICAL MATERIEL ITEMS TESTED AND
EVALUATED FOR USE IN THE (U) SCHOOL OF AEROSPACE
MEDICINE BROOKS AFB TX P A LAND ET AL. JUN 86

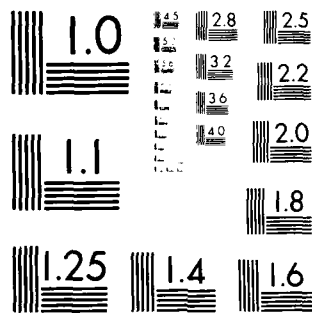
1/2

UNCLASSIFIED

USAFSAM-TR-86-10

P/G 6/12

NL



USAFSAM-TR-86-10

(12)

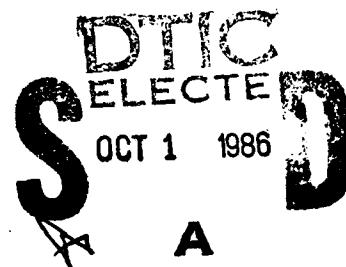
STATUS REPORT ON MEDICAL MATERIEL ITEMS TESTED AND EVALUATED FOR USE IN THE USAF AEROMEDICAL EVACUATION SYSTEM

AD-A172 286

Patricia A. Land, Captain, USAF. NC
Larry A. Warfel, Technical Sergeant, USAF

June 1986

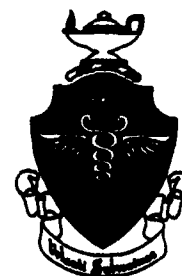
Final Report for Period January 1983 - February 1986



Approved for public release; distribution is unlimited.

DTIC FILE COPY

USAF SCHOOL OF AEROSPACE MEDICINE
Aerospace Medical Division (AFSC)
Brooks Air Force Base, TX 78235-5301



86 10 01 05

NOTICES

This final report was submitted by personnel of the Chemical Defense Branch, Crew Technology Division, USAF School of Aerospace Medicine, Aerospace Medical Division, AFSC, Brooks AFB, Texas, under job order 7930-16-F4.

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder, or any other person or corporation; or as conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

The Office of Public Affairs has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.

Patricia A. Land
PATRICIA A. LAND, Captain, USAF, NC
Project Scientist

F. Wesley Baumgardner
F. WESLEY BAUMGARDNER, Ph.D.
Supervisor

Jeffrey G. Davis
JEFFREY G. DAVIS, Colonel, USAF, MC
Commander

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	





DEPARTMENT OF THE AIR FORCE
USAF SCHOOL OF AEROSPACE MEDICINE (AFSC)
BROOKS AIR FORCE BASE, TEXAS 78235 5301

01 APR 1987

REF ID:
ATTN OF VNC

SUBJECT Addition of Change Pages and Pen and Ink Changes to USAFSAM-TR-86-10

TO ~~See Distribution List, Parts I and II~~

1. Please insert the attached change pages and make the following pen and ink changes to your USAFSAM-TR-86-10, Status Report on Medical Materiel Items Tested and Evaluated for Use in the USAF Aeromedical Evacuation System:

a. Page v, TABLE OF CONTENTS, SECTION I, ACCEPTABLE EQUIPMENT, Infusion Pumps:

ADD (g) AVI Guardian Volumetric Control Delivery System,
Model 100.....10-1

b. Page vi, TABLE OF CONTENTS, SECTION I, ACCEPTABLE EQUIPMENT, Miscellaneous:

ADD (f) Ohmeda Low Maintenance Battery Pack,
Stock# 217-3813-910.....38-1

ADD (g) Aerovac Extracorporeal Membrane Oxygenation (ECMO)
System.....38-2

c. Page xi, TABLE OF CONTENTS, SECTION IV, UNACCEPTABLE EQUIPMENT, Suction Units:

ADD (b) Laerdal Model 790013 Suction Unit.....117

d. Page xi, TABLE OF CONTENTS, SECTION IV, UNACCEPTABLE EQUIPMENT, Incubators:

ADD (g) Airborne Infant Life Support System Model ILSM-P.....118

e. Page xi, TABLE OF CONTENTS, SECTION IV, UNACCEPTABLE EQUIPMENT, Ventilators:

ADD (g) Bio-Med Devices P-7 Adult Ventilator.....119

ADD (h) Bio-Med Devices Flow-Disc MVP-10 Pediatric
Ventilator.....119

f. Page xii, TABLE OF CONTENTS, SECTION V, ACCEPTABLE SUPPLY ITEMS, Thermometers:

ADD (b) Takeda Medical Digital Thermometer, Model UF-10.....128-1

ADD (c) Nelkin/Piper Digital Thermometer, Model 268.....128-2

89 11 22 072

ADD (d) Nelkin/Piper Digital Thermometer, Model 270.....128-3

g. Page xii, TABLE OF CONTENTS, SECTION V, ACCEPTABLE SUPPLY ITEMS,
Miscellaneous:

ADD (h) Biosources International Model C-2000 and Model KR-700
Amplifying Stethoscopes.....138-1

ADD (i) CHAD Oxymizer, Oxygen Conserving Nasal Cannula.....138-2

h. Page 117, SECTION IV, UNACCEPTABLE EQUIPMENT, Suction Units:

ADD b. Laerdal Model 790013 Suction Unit
Excessive EMI.

i. Page 118, SECTION IV, UNACCEPTABLE EQUIPMENT, Incubators:


ADD g. Airborne Infant Life Support System Model ILSM-P
Excessive EMI. A critical component, the Bio-Med
Devices Flow-Disc MVP-10 Pediatric Ventilator, failed
altitude evaluation (see page 119, h.).

j. Page 119, SECTION IV, UNACCEPTABLE EQUIPMENT, Ventilators:

ADD g. Bio-Med Devices P-7 Adult Ventilator
Excessive intra-pulmonary peak pressure and tidal volume
at altitude. Decreased ventilatory rate at altitude.

ADD h. Bio-Med Devices Flow-Disc MVP-10 Pediatric Ventilator
Excessive intra-pulmonary peak pressure and tidal volume
at altitude. Decreased ventilatory rate at altitude.

2. For additional information, please contact TSgt Jenkins, USAFSAM/VNC,
Brooks AFB TX 78235-5301 (AUTOVON 240-2937).


W. C. ALEXANDER, PhD
Chief, Crew Technology Division
Senior Executive

3 Atch

1. Change Pages

~~2. Distribution List, Part I~~

~~3. Distribution List, Part II~~



DEPARTMENT OF THE AIR FORCE
USAF SCHOOL OF AEROSPACE MEDICINE (AFSC)
BROOKS AIR FORCE BASE, TEXAS 78235-5301

20 SEP 1989

REPLY TO
ATTN OF VNC

SUBJECT Changes to USAFSAM-TR-86-10

TO See Distribution List, Atch 3

1. Attachment 1 lists the latest changes to USAFSAM-TR-86-10, Status Report on Medical Materiel Items Tested and Evaluated for Use in the Aeromedical Evacuation System. Please make page additions, and pen and ink changes as indicated.

2. Attachment 2, which includes 1987 changes to USAFSAM-TR-86-10, is included for units which did not receive those changes.

3. A new edition of the "Status Report" will be published in calendar year 1990. For additional information, please contact MSgt Philbeck at USAFSAM/VNC, Brooks AFB TX 78235-5301 (AUTOVON 240-2937).

FOR THE COMMANDER

W. C. ALEXANDER, PhD
Chief, Crew Technology Division
Senior Executive

4 Atch

1. Change Pages 1989
2. Change Pages 1987
3. Distribution List
Part I
4. Distribution List
Part II

AFD: AAA#45

Attachment 1, Page Changes 1989

Insert the attached page changes (13 each), and make the following pen and ink changes to the USAFSAM-TR-86-10:

Page v, TABLE OF CONTENTS, SECTION I, ACCEPTABLE EQUIPMENT

Infusion Pumps

ADD (h) Biomed Infusion Pump.....	10-2
ADD (i) Arm-A-Flow IV Flow Regulator.....	10-3
ADD (j) Emergency and Military Infusion System (EMIS).....	10-4

Oxygen Analyzers

ADD (c) MiniOX III Oxygen Monitor.....	14-2 <u>1</u>
--	---------------

Respirators/Ventilators/Resuscitators

ADD (m) Military Transport Respirator, Model TXP.....	26-1
ADD (n) Bear 33 Volume Ventilator.....	26-2

Page vi, TABLE OF CONTENTS, SECTION I, ACCEPTABLE EQUIPMENT

Transport Incubators

ADD (b) Airborne Life Support System (ALSS) Infant Transport Incubator, Model ALSS 185.....	31-1
--	------

Miscellaneous

ADD (h) Headset Communication System, Model 7800H.....	38-3
--	------

Page x, TABLE OF CONTENTS, SECTION IV, UNACCEPTABLE EQUIPMENT

Infusion Systems

ADD (h) IV Stat Constant Pressure Infuser, Model 250-X.....	113
---	-----

Page xi, TABLE OF CONTENTS, SECTION IV, UNACCEPTABLE EQUIPMENT

Miscellaneous

ADD (c) Concoa Oxygen Regulator, PN# 0305-9999.....121

ADD (d) Biochem Microspan Pulse Oximeter, Model 3040.....121

Page xii, TABLE OF CONTENTS, SECTION V, ACCEPTABLE SUPPLY ITEMS

Miscellaneous

ADD (j) Argyle Sentinal Seal Dual Chest Drainage Unit.....138-3

ADD (k) Migada Underwater Chest Drainage Unit.....138-4

ADD (l) Pleura Gard Chest Drainage Unit.....138-5

ADD (m) Thora Drain III Underwater Drainage System.....138-6

ADD (n) Thora-Klex Chest Drainage Unit.....138-7

Page 113, Infusion Systems

ADD h. IV Stat Constant Pressure Infuser, Model 250-X
Safety problems during operation

Page 121, Miscellaneous

ADD c. Concoa Corporation Oxygen Regulator, PN# 0305-9999
Unable to maintain set pressure during vibration test (pressure control adjustment knob rotates).

ADD d. Biochem Microspan Pulse Oximeter, Model 3040
Excessive EMI

Page 137

ADD Note

For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.

During ascent and descent the changing cabin air pressure forces the water levels to move between the different chambers of the unit. To ensure proper operation, readjust the water level in the water seal and suction control chamber as necessary after each landing.

During descent, water from the water seal chamber will move into the collection chamber. This will dilute the patient's fluids which have accumulated and this additional fluid must be accounted for when measuring the patient's output.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS <i>AT 72 286</i>	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE			
4. PERFORMING ORGANIZATION REPORT NUMBER(S) USAFSAM-TR-86-10		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION USAF School of Aerospace Medicine	6b. OFFICE SYMBOL (If applicable) USAFSAM/VNC	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) Aerospace Medical Division (AFSC) Brooks Air Force Base, Texas 78235-5301		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION USAF School of Aerospace Medicine	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code) Aerospace Medical Division (AFSC) Brooks Air Force Base, Texas 78235-5301		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO. 62202F	PROJECT NO. 7930
		TASK NO. 16	WORK UNIT ACCESSION NO. F4
11. TITLE (Include Security Classification) STATUS REPORT ON MEDICAL MATERIEL ITEMS TESTED AND EVALUATED FOR USE IN THE USAF AEROMEDICAL EVACUATION SYSTEM			
12. PERSONAL AUTHOR(S) Land, Patricia A.; and Warfel, Larry A.			
13a. TYPE OF REPORT Final Report	13b. TIME COVERED FROM Jan 83 to Feb 86	14. DATE OF REPORT (Year, Month, Day) 1986, June	15. PAGE COUNT 154
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Airevac Equipment, Aeromedical Equipment	
FIELD 06	GROUP 12		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) The medical equipment items contained in this book were tested/evaluated/developed primarily for use in the United States Air Force aeromedical evacuation system to include the Aerospace Rescue and Recovery Service. The acceptability/nonacceptability designations apply only to the routine use of a particular piece of equipment in the unique aeromedical evacuation environment of the Department of Defense and are not intended as representations to be relied upon by persons or entities outside of the Department of Defense.			
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Patricia A. Land, Capt, USAF, NC		22b. TELEPHONE (Include Area Code) (512) 536-2937	22c. OFFICE SYMBOL USAFSAM/VNC

DD FORM 1473, 84 MAR

83 APR edition may be used until exhausted.

All other editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

1 / 11

PREFACE

This Status Report is intended as a quick reference guide for users. Requisition of equipment/supply items should be initiated through normal procurement channels.

The Status Report is divided into the following sections:

SECTION I

Medical equipment items acceptable for use onboard aeromedical evacuation aircraft and available from the manufacturer.

SECTION II

Medical equipment items that are acceptable for use onboard aeromedical evacuation aircraft but are no longer available from the manufacturer.

SECTION III

Medical equipment items that are acceptable for use onboard aeromedical evacuation aircraft; procured via local fabrication or contract.

SECTION IV

Medical equipment items not acceptable for use onboard aeromedical evacuation aircraft.

SECTION V

Medical supply items acceptable for use onboard aeromedical evacuation aircraft.

SECTION VI

1. Medical supply items no longer available from the manufacturer.
2. Medical supply items not acceptable for use onboard aeromedical evacuation aircraft.

Note:

1. The medical equipment items were tested/evaluated/developed primarily for use in the United States Air Force aeromedical evacuation system to include the Aerospace Rescue and Recovery Service.
2. All electrical testing is accomplished IAW MIL-STD-461B (category Ale equipment).
3. MIL-STD-461B (1 Apr 80) supersedes MIL-STD-461A. Both versions of this standard are referenced in this text.

4. The acceptability/nonacceptability designations apply only to the routine use of the particular equipment item in the unique aeromedical evacuation environment of the Department of Defense and are not intended as representations to be relied upon by persons or entities outside of the Department of Defense.

5. The USAFSAM/VNC, Aeromedical Systems Function, will provide supplemental information on newly updated/evaluated equipment as testing is completed. Distribution will be made to units actively participating in aeromedical evacuation.

6. The USAFSAM/VNC, Aeromedical Systems Function, will provide additional information by calling AUTOVON 240-2937 or commercial line (512) 536-2937, or by writing to Aeromedical Systems Function, USAFSAM/VNC, Brooks AFB TX 78235-5301.

7. The USAFSAM/VNC, Aeromedical Systems Function, will publish this Status Report every two years.

8. The term "electrically susceptible patient" means a patient with an externalized, foreign electrical connection, one end of which is connected to or terminates in the immediate vicinity of the heart (AFR 160-3).

a. Type A Equipment is equipment specifically authorized for routine use with electrically susceptible patients.

b. Type B Equipment is equipment authorized for routine use with all patients except electrically susceptible patients.

TABLE OF CONTENTS

Page

SECTION I: ACCEPTABLE EQUIPMENT

Cardioscopes/Defibrillators/Recorders

- (a) Life Pak 5 Cardioscope/Recorder Module
Life Pak 5 Defibrillator/Synchronizer Module
Life Pak 5 Battery Pak Charger
Life Pak 5 Nickel Cadmium Battery Pak3
- (b) MRL 450 SL-AF Monitor/Defibrillator/Recorder4

Infusion Pumps

- (a) Holter Infusion Pump, Model 903 & 9115
- (b) IMED 922 Volumetric Infusion Pump6
- (c) IMED 928 Volumetric Infusion Pump7
- (d) IMED 960 Volumetric Infusion Pump8
- (e) Harvard Apparatus Model 2720 Syringe Infusion Pump9
- (f) Autosyringe AS*2F Infusion Pump10
- (g) *AVI Guardian Volumetric Control Delivery System, Model 100*10

Electronic Blood Pressure Monitors

- (a) MedSonics Ultrasound Stethoscope11
- (b) Medtek BPI 420 Blood Pressure/Pulse Monitor12

Oxygen Analyzers

- (a) BioMarine Oxygen Analyzer, Model OA202R13
- (b) BioMarine High Humidity Adapter14

Respirators/Ventilators/Resuscitators

- (a) BABYbird Infant Ventilator, Model 590015
- (b) Infant AIRbird Resuscitator16
- (c) Hope II Infant Resuscitator17
- (d) AMBU Baby Resuscitator with Paedi Valve18
- (e) Laerdal Child Resuscitator19
- (f) Laerdal Infant Resuscitator20
- (g) Adult AMBU Resuscitator with E-2 Valve and NR Valve21
- (h) AIRbird Adult Resuscitator with Silicone Bag22
- (i) Hope II Adult Resuscitator with Midas Mask23
- (j) Laerdal Adult Resuscitator24
- (k) Robertshaw Dual Cylinder Portable Resuscitator25
- (l) Flynn Series III Ventilator with Oxygen Powered Aspirator26

CONTENTS (continued)

Page

Section I

Suction Equipment

- (a) Ohio Intermittent Suction Unit27
- (b) Rico Model RS-6 Fixed/Portable Suction System28
- (c) Impact Model 305GR Portable Aspirator29
- (d) Impact Model 308M Portable Aspirator30

Transport Incubators

- Ohio Air-Vac Transport Incubator with Battery Pak31

Air Compressors

- (a) Ohio High Performance Air Compressor32
- (b) Timeter Aridyne 3500 Medical Air Compressor System33

Miscellaneous

- (a) Stryker Wedge Turning Frame, Model 12434
- (b) Compur M 1100 Mini-Centrifuge35
- (c) Compur M 1000 Mini-Photometer36
- (d) French Vacuum Immobilizer Litter37
- (e) Veriflo Oxygen Regulator, Model 74738

CONTENTS (continued)

Page

SECTION II: ACCEPTABLE EQUIPMENT ITEMS THAT ARE NO LONGER MANUFACTURED

Cardioscopes/Defibrillators/Recorders

(a) Life Pak 3 Portable Battery Operated Defibrillator	41
(b) Life Pak 4 ECG Monitor, Tapewriter and Defibrillator	42
(c) Physio-Control Electrocardiograph Recorder	43
(d) Datascope M/D3 Monitor, Defibrillator/Synchronizer, Recorder and Support Module II	44
(e) Datascope Dual Trace Physiological Monitor, Model 850M	45
(f) Datascope Physiological Monitor, Model 850	46
(g) Datascope Resuscitron DC Defibrillator, Model 680	47
(h) Amb Pak 450 SL-AF Monitor, Defibrillator/Synchronizer, Recorder, and Battery Charger	48
(i) Amb Pak Model 500/AT-AF Physiological Monitor	49
(j) Birtcher Electrocardiograph Recorder, Model 355	50
(k) Burdick ECG Recorder, Model EK-4	51
l) Burdick DC180M Defibrillator/Monitor with Serial Numbers 020003 and Below	52
(m) Tektronix Physiological Monitor, Type 410	53
(n) Monopulse 807B Defibrillator with Electrocardioscope, Pacemaker, and Synchronizer	54
(o) Hewlett Packard Neonatal Monitor, Model 78260A	55

Infusion Pumps

Extracorporeal Infusion Pump, Models 1203 and 1211	56
--	----

Inhalation Therapy Equipment

Blount Inhalation Therapy Equipment:

(1) Twin-O-Vac, Model 3100	
(2) Mist-Viva Respirator, Model 3500	
(3) Oxygen Flowmeter, Model 3700	
(4) Humidifier, Model 3750	57

Blood Pressure Monitoring Equipment

(a) Ultrasonic Monitor, "Hemosonde," Model 2300	58
(b) Biomega Blood Pressure/Pulse Monitor, Model 423B	59
(c) Sphygmometrics Infrasonde Electronic Blood Pressure Monitor, Model M3010	60

Nebulizer Units

Aquapak Nebulizer Model 500, with 921 Adapter and 091 Aquatherm Heating Unit	61
---	----

CONTENTS (continued)

Page

Section II

Respirators/Ventilators/Resuscitators

(a) bird Mark 10 Ventilator	62
(b) bird Mark 14 Respirator	63
(c) URGENCY bird Reduced For Neonates	64
(d) Travenol Heart-Lung Resuscitator, Model HLR 50-90	65
(e) Samson Neonatal Resuscitator	66

Suctioning Equipment

(a) Automatic Thermotic Aspirator Vacuum Pump, Model 763N	67
(b) Gomco Aspirator Portable Pump, Model 789	68
(c) Medical Multipurpose Suction Pump (Sundstrand) Model 77-500	69
(d) Mueller Aspirator Pump (Carmody)	70
(e) Laerdal Suction Unit, Transformer/Rectifier	71

Thermometers

IVAC Digital Electronic Thermometer with EMI Suppression Case, Model 810	72
---	----

Transport Incubators

(a) Ohio Transport Incubator (Modified for Aeromedical Evacuation)	73
(b) Narco Air-Shields Mobile Transport Incubator, Model TI67-1	74

Transcutaneous Oxygen Monitors

Novamatrix TcO ₂ mette Portable TcPO ₂ Monitor, Model 809	75
---	----

Oxygen Monitors

BioMarine Oxygen Monitor/Controller, Model 400	76
--	----

Miscellaneous

(a) Gorman-Rupp Patient Thermoregulator, Model RK 250	77
(b) DePuy Cast-O-Vac Cast Cutter, Model 1049	78
(c) Dextrometer Reflectance Colorimeter	79

CONTENTS (continued)

Page

SECTION III: ACCEPTABLE EQUIPMENT ITEMS FOR LOCAL FABRICATION OR CONTRACT PROCUREMENT

Oxygen Equipment

- (a) Portable Therapeutic LOX System (5L)83
- (b) C-141 Therapeutic Oxygen Manifold Distribution System
(TOMS)84
- (c) Mistogen Electronic Nebulizer, Model EN153A85
- (d) Mistogen Electronic Nebulizer, Model XEN 15386

Suctioning Equipment

- (a) SAM Multipurpose Vacuum Pump87
- (b) Portable Tracheal Aspirator (Prototype)88

Litter/Litter Accessories

- (a) Modified Stokes Litter89
- (b) Litter Access Device90
- (c) Litter Enplaning-Deplaning Device (LEDD)91
- (d) Litter Equipment Support Device92
- (e) Litter Mounted Examination Lamp93
- (f) Litter Linen Lift94
- (g) Litter/Stryker Frame Respirator Mount95
- (h) Multipurpose Aeromedical Tray Holder96
- (i) RF Nurse Call System (MEDICALL)97
- (j) Modesty Curtain, Disposable98
- (k) Pediatric Safety Net99
- (l) Septisol Foam (4.6 oz) Dispenser Mount100

Miscellaneous

- (a) Frequency Converter 400/60 Hz Model PS-75-426-1101
- (b) Vickers Aircraft Transit Isolator102
- (c) Inflight Intravenous Bottle Holder103
- (d) Clinical Records Rack104
- (e) Medical Treatment Chest105
- (f) Transportable Airborne Therapeutic Station (TATS)106
- (g) SAM Infusion Pump Bubble Detector with Holter Infusion Pump107

CONTENTS (continued)

Page

SECTION IV: UNACCEPTABLE EQUIPMENT

Cardioscopes/Defibrillators/Recorders

(a) Datascope Cardiotron, Model 650, with Model G Power Module	111
(b) Datascope M/D 2J Monitor/Defibrillator/Synchronizer	111
(c) Tektronix 413 Neonatal Monitor with 400 Series Recorder	111
(d) Mennen-Greatbatch Cardio Pak 936S Monitor/Defibrillator/ Synchronizer/Recorder	111
(e) Mennen-Greatbatch Neonatal Monitor, Model 744, with Recorder	111
(f) Fairfield DMS600 Cardio-aid Defibrillator	111
(g) SpaceLabs 413A Monitor/Digital Readout/Recorder (formerly the Vitatek 413A Neonatal Monitor)	111
(h) Motorola Advanced Portable Duplex Coronary Observation Unit	111
(i) Datascope M/D 3A Monitor/Defibrillator	111
(j) Burdick DC 180M Monitor/Defibrillator with Serial Numbers 020004 and above	111
(k) Hewlett-Packard Model 78670A Cardiac Monitor/Defibrillator	111

Humidifiers

(a) Bennett Cascade Humidifier, Model 1900	112
(b) bird Heater Nebulizer Tube	112
(c) bird Immersion Heater	112
(d) Puritan-Bennett Nebulizer with Immersion Heater, Model 126055, PN 12900	112

Infusion Systems

(a) DIAL-A-FLO Device	113
(b) Harvard Compact Infusion Pump, Model 975	113
(c) IVAC 400 Automatic Self-Regulating IV Infusion Pump	113
(d) IVAC 500 Automatic Self-Regulating IV Infusion Pump	113
(e) Sigmamotor TM-20-2 Infusion Pump	113
(f) Sigmamotor VOLUMET Infusion Pump	113
(g) Travenol FLO-GUARD 6000 Volumetric Infusion Pump	113

Blood Pressure Measurement Devices

(a) Filac Vital Signs Monitor, Model F-600	114
(b) Infrasonde Electronic Blood Pressure Monitor	114
(c) Somatronix Digital Blood Pressure/Pulse Monitor, Model 307	114
(d) Sphygmostat Electronic Blood Pressure Monitor, Model B-300	114
(e) Sphygmostat Electronic Blood Pressure Monitor, Model B-350	114
(f) Sphygmostat Pulse Monitor, Model P-75	114

Rescue Litter Devices

Thompson Carrier	115
------------------------	-----

CONTENTS (continued)

Page

Section IV

Respiratory Monitors

- (a) Stoelting's Infant Sentry Apnea Alarm, Model 1500
(Prior Name - AEL)116
- (b) Tektronix 413 Neonatal Monitor with 400 Series Recorder116
- (c) SpaceLabs 413A Monitor/Digital Readout/Recorder (formerly the
Vitatek 413A Neonatal Monitor)116

Suction Units

- IMPACT Model 302 Portable Aspirator117

Incubators

- (a) Air-Shields (Isolette) Transport Incubator, Model TI-58118
- (b) Armstrong CARE-ETTE Isolation Incubator, Model 190A118
- (c) Mistogen Transport Incubator, Model TI-700118
- (d) Sierracin Cradle Warmer118
- (e) Vickers Transport Incubator, Model 77118
- (f) Healthdyne Infant Transport System118

Ventilators

- (a) Bennett MA-1 Ventilator119
- (b) bird Ventilator Unit, 28 VDC and 110 VAC/60 Hz Compressors,
Battery Pack and Charger (Prototypes)119
- (c) Bourns BP200 Infant Pressure Ventilator119
- (d) Monaghan Volume Ventilator, Model 225119
- (e) Searle VVA Adult Volume Ventilator119
- (f) Siemens-Elema 900B Servo Ventilator119

Battery Packs

- Ohio Gel Cell 12V Battery Pak120

Miscellaneous

- (a) Oximetrix Shaw Catheter Oximeter121
- (b) Accumed TM-IV Semi-Rigid Bottle121

CONTENTS (continued)

Page

SECTION V: ACCEPTABLE SUPPLY ITEMS

Endotracheal Cuffs/Tubes

Kamen-Wilkinson Foam Cuff and Endotracheal Tube	125
---	-----

Nebulizer Units

(a) bird Free Flow Humidification Kit	126
(b) Bard-Parker Nebulizer Heater Jacket	127

Thermometers

Tempa-Dot Single Use Oral Thermometer	128
---	-----

Closed Urinary Drainage Systems

(a) Dover Urinary Drainage Bag with Flo-Check Valve and Drainage Bag with Urine Meter	129
(b) Dynacor Closed Urinary Drainage System	130
(c) Curity Monoflo Drainage Bag and Curity Urine Meter with Aspirating Port	131

Miscellaneous

(a) Aero-West Aerosol Dispenser with "Dear John" Aerosol, Model 510H-15	132
(b) Disposable Ashtray	133
(c) Disposable Oxygen Masks	134
(d) Heimlich Valve	135
(e) Litter Back-Rests	136
(f) Pleur-Evac Adult-Pediatric, Model A-4000 Non-Metered and Model A-4010 Metered	137
(g) Vialflex Plastic IV Containers	138

SECTION VI: ACCEPTABLE SUPPLY ITEMS THAT
ARE NO LONGER MANUFACTURED
OR
UNACCEPTABLE SUPPLY ITEMS

1. Medical Supply Items No Longer Available From The Manufacturer
 - (a) Lanz Endotracheal Tube with McGinnis Cuff141
 - (b) Redi-Temp Heat/Cold Therapy System142
 - (c) Uni-Temp Single Use Thermometer143
2. Medical Supply Items Not Acceptable For Use Onboard Aeromedical Evacuation Aircraft
 - (a) Stryker Cast Cutter Plaster VAC, Model 845145
 - (b) Blount Oxygen Flow Meter146
 - (c) Closed Urinary Drainage Systems
 - (1) Abbott Drainbag 2000147
 - (2) Travenol Cystoflo II Urinary Drainage Bag147

SECTION I

MEDICAL EQUIPMENT ITEMS ACCEPTABLE FOR USE ONBOARD AEROMEDICAL EVACUATION
AIRCRAFT AND AVAILABLE FROM THE MANUFACTURER

Product and Manufacturer

Life Pak 5 Cardioscope/Recorder Module
Life Pak 5 Defibrillator/Synchronizer Module
Life Pak 5 Battery Pak Charger
Life Pak 5 Nickel Cadmium Battery Pak

Physio-Control Corporation
11811 Willows Road
Redmond, WA 98052

Telephone: 1-800-426-8047

Date Evaluated

December 1977; May 1979

Summary

The Life Pak 5 Cardioscope/Recorder, DC Defibrillator/Synchronizer Modules and Battery/Pak Charger were found conditionally acceptable for use in aeromedical evacuation in the initial Test and Evaluation Report dated December 1977. Physio-Control Corporation submitted a modified unit for retest and evaluation. Retesting of only the modified areas was accomplished.

Based on the results of tests conducted on one Life Pak 5 Cardioscope/Recorder Module and DC Defibrillator/Synchronizer Module, these modules can be considered acceptable for use onboard aeromedical evacuation aircraft and Aerospace Rescue and Recovery Service helicopters. The Battery/Pak Charger can only be considered acceptable if the manufacturer performs the modifications mentioned in paragraph 4.1.6, Vibration Test.

Power Requirements: Charger will operate from 110 VAC/50-400 Hz or Battery.

Procurement

Manufacturer.

Note

Physio-Control Corporation incorporated the recommended modifications into all of their production models.

PREVIOUS PAGE
IS BLANK



Product and Manufacturer

MRL 450 SL-AF Monitor/Defibrillator/Recorder

Medical Research Laboratories, Inc.
7450 Natchez Ave
Niles, IL 60648

Telephone: (312) 792-2666

Date Evaluated

November 1984

Summary

The MRL 450 SL-AF is a portable Cardiac Monitor/Defibrillator/Recorder. The ECG monitor has a 12.7-cm (5-inch) non-fade scope, digital heart rate display, and a hold push button for analyzing ECG signals. The lead select control allows selection of the leads I, II, III or "quick-look" paddle configurations. The QRS beeper volume and QRS sensitivity can be adjusted from the monitor control panel. The monitor has the options of a High/Low heart rate alarm and battery test function which displays the percentage of battery life remaining. The Defibrillator/Synchronizer can provide up to 360 joules of delivered energy in eight discrete levels (5, 10, 20, 40, 80, 160, 240, 360). All defibrillator controls, including a low battery indicator and remote chart recorder switch, are located on the defibrillator paddles. The recorder documents ECG waveforms in either real time or 4-second delay (optional).

Based on the results of tests conducted, the MRL 450 SL-AF includes necessary modifications and can be considered acceptable for use onboard aeromedical evacuation aircraft and Aerospace Rescue and Recovery Service helicopters.

Power Requirements: The MRL 450 SL-AF can be operated on 115 VAC/60-400 Hz, 28 VDC, or an internal battery.

Procurement

Manufacturer

Product and Manufacturer

Holter Infusion Pump, Model 903 & 911
Charger Model No. RP 159

Critikon, Inc.
P.O. Box 22800
Tampa, FL 33630

Telephone: 1-800-237-7541

Date Evaluated

August 1973

Summary

Based on tests conducted on one unit, the Holter Pump Power Supply/Charger unit meets all criteria required. From a clinical standpoint, the Holter pump should not be used without an air bubble detector with capabilities of cutting off the pump at the first indication of air bubbles in the administration set tubing. Air may be pumped if the fluid container is allowed to empty or the pump chamber is torn or punctured.

Power Requirements: The Holter Pump Power Supply/Charger will operate from 115 VAC/50-60 Hz or battery. When using 115 VAC/400 Hz, power unit should not be operated near an electrically susceptible patient.

Procurement

Manufacturer. Highly recommend that the Holter Infusion Pump be modified to incorporate USAF School of Aerospace Medicine Bubble Detector. Would then be contract item.

Product and Manufacturer

IMED 922 Volumetric Infusion Pump
Accuset Disposable Cassette

IMED Corporation
9925 Carroll Canyon Road
San Diego, CA 92131

Telephone: 1-800-854-2033

Date Evaluated:

May 1977

Summary

The IMED 922 Volumetric Infusion Pump is conditionally acceptable for use.

1. The Air-In-Line detector does not sense air bubbles 0.95 cm (3/8 inch) or smaller; therefore, a final inline filter of the air eliminator type should be used to outgas any air that passes the detector. On line power the IMED exceeded the ground resistance limit by 10 milliohms which means the pump should not be used on an electrically susceptible patient; however, it passed all aircraft Mil-Std tests and can be used in the airborne environment.

2. Due to the pump's height and weight, a special securing method will be required. The manufacturer recommends battery replacement if battery voltage drops below 4-4.5 volts; however, normal battery life should be at least 2 years. The low battery alarm will activate at 5.8 volts and the unit will continue to operate until it falls below 5.5 volts (approximately 1 hour).

Power Requirements: Line Source 110 VAC/50-400 Hz (if not used on an electrically susceptible patient) or battery (fully charged battery will operate the unit for 40 hours at 125 cm³/hr under ideal conditions).

Procurement

Manufacturer. FSN 6515-01-025-8839.

Note

The IMED 922 Infusion Pump should not be operated on line power (110 VAC/50-400 Hz) onboard aeromedical evacuation aircraft.

Product and Manufacturer

IMED 928 Volumetric Infusion Pump

IMED Corporation
9925 Carroll Canyon Rd
San Diego, CA 92131

Telephone: 1-800-854-2033

Date Evaluated

Nov 1983

Summary

The IMED 928 Volumetric Infusion Pump is the high rate (0-799 cm³/hr), all fluids detector, four-digit volume counter pump. The Air-Line detector does not sense air bubbles 0.95 cm (3/8 inch) or smaller; therefore, a final inline filter of the air eliminator type should be used to outgas any air that passes the detector. When a rate of 799 cm³ per hour is selected, rate accuracy is well within the $\pm 2\%$ error factor. A fully charged battery, without battery charger connected, will operate the pump at the selected rate of 799 cm³/hr for a period of 5 to 6 hours. Due to the pump's height and weight, a special securing method will be required. The manufacturer recommends battery replacement if the battery voltage drops below 4-4.5 volts; however, normal battery life should be at least 2 years. The low battery alarm will activate at 5.8 volts and the unit will continue to operate until it falls below 5.5 volts (approximately 1 hour).

Power Requirements: Internal sealed gel-cel lead acid batteries only (fully charged battery will operate the unit for 25 hours at 125 cm³/hr under ideal conditions).

Procurement

Manufacturer

Note

The IMED 928 did not pass electrical Standards from MIL-STD-461B on line power (110 VAC/60 Hz). Unit was not evaluated on 400 Hz.

Product and Manufacturer

IMED 960 Volumetric Infusion Pump

IMED Corporation
9925 Carroll Canyon Road
San Diego, CA 92131

Telephone: 1-800-854-2033

Date Evaluated

April 1980

Summary

The IMED 960 Volumetric Infusion Pump is a unit that provides the capability to deliver a set volume per hour. The pump can be either AC line or battery operated. The battery volume/capacity with the pump operating at 999 ml/hr is 7 hours, at 125 ml/hr, 17 hours, and at 50 ml/hr, 24 hours. The pump communicates operating conditions and alarm situations to the operator by a readout on the liquid crystal display (lcd) panel and also incorporates an audible alarm. Rates can be selected from 1 ml to 999 ml/hr and volume to be delivered can be selected from 1 ml to 999 ml. The pump incorporates an air embolism detector that will detect air bubbles in excess of 0.045 ml (1/4 inch) on the distal side of the cassette.

Based on the results of the tests conducted, the IMED 960 Volumetric Infusion Pump can be considered acceptable for use in aeromedical evacuation aircraft and helicopters. The Air-In-Line Detector functioned in accordance with manufacturer's specifications. It is still recommended to incorporate the final filter to outgas any air that might pass the Air-In-Line Detector.

Power Requirements: 120 VAC/60 Hz and internal rechargeable batteries. Unit was not tested on 400 Hz.

Procurement

Manufacturer

Product and Manufacturer

Harvard Apparatus Model 2720 Syringe Infusion Pump

Bard Medical Systems
87 Concord St.
North Reading, MA 01864

Telephone: 1-800-343-0366

Date Evaluated

December 1981

Summary

The Harvard Model 2720 Syringe Infusion Pump is a portable unit featuring microprocessor electronics which produce pulses to drive a stepping motor and lead screw at exact rates to empty syringes. The unit will accept either the 50 cm³ B-D Plastipak or the Monoject 60 cm³ plastic disposable syringes. Any flow rate from 0.1 to 99 cm³/hr can be selected. Flow rates are accurate to +3%.

Power Requirements: 115 VAC/60 Hz (not tested on 400 Hz) or internal battery.

Procurement

Manufacturer

Product and Manufacturer

Autosyringe AS*2F Infusion Pump

Autosyringe, Inc.
Londonderry Turnpike Bypass 28
Hooksett, NH 03104

Telephone: 1-800-258-3591

Date Evaluated

February 1982

Summary

The Autosyringe Model AS*2F is a portable, battery-powered, programmable infusion pump. The unit delivers a constant infusion by rapidly pulsing many small accurate amounts of medication. It accepts disposable syringes up to 50 cm³ in overall capacity, and can infuse fluids intravenously, subcutaneously, or intra-arterially. Fluid delivery can be controlled independently of the main IV flow by connecting the pump to any of the supplemental injection sites available on most IV infusion sets. The Autosyringe AS*2F can infuse from 1 cm to 44 cm³ of fluids at the infusion rates of 0.5 hours to 49.5 hours, in steps of 0.5 hours.

Power Requirements: Internal battery source or external 115 VAC/60 Hz (not tested on 400 Hz).

Procurement

Manufacturer

Product and Manufacturer

AVI Guardian Volumetric Control Delivery System, Model 100

AVI Inc.
1118 Red Fox Road
St. Paul, Minnesota 92131

Telephone: 1-800-336-7657

Date Evaluated

December 1986

Summary

The Guardian Volumetric Control Delivery System, Model 100, in conjunction with the AVI Guardian IV Administration Set, is designed to automatically regulate the flow rate of most intravenous and/or intra-arterial infusions. The unit provides a constant, non-pulsating flow at selected rates from 1 to 999 milliliters per hour (ml/hr) in 1 ml/hr increments with a volume delivered accuracy of $\pm 2\%$. The unit has a battery operation time of approximately eight hours at a flow rate of 125 ml/hr (when fully charged). When the unit has delivered the pre-selected volume to be infused, a visual and audio alarm is activated, and a keep vein open (KVO) rate of 1 ml/hr begins. The unit incorporates an air-in-cassette detector that will detect air bubbles of 0.15 ml or larger.

Power Requirements: 115 VAC 50-60 Hz and internal, rechargeable, sealed gel-celled, lead acid batteries. Operation of the unit on 115 VAC/400 Hz power is not recommended. Use of the AVI 100 on board C-130 and C-141 aircraft should be limited to battery operation or operation from a frequency converter that provides 115 VAC/60 Hz power.

Procurement

Manufacturer

Note

1. Although the manufacturer's air-in-cassette detector prevented any appreciable air bubbles from passing the upper pump chamber of the cassette during our evaluation, an in-line filter should still be placed close to the infusion site to remove any air or particles which may occur in the IV fluid.
2. Exposure to subfreezing temperatures for even short periods of time may cause the infusion fluid in the narrow IV tubing to freeze, activating an audio/visual alarm and stopping the fluid flow.
3. To prevent unrestricted flow of IV fluid, always use the manual IV clamp before removing the administration set.

Product and Manufacturer

Biomed Spring-Actuated Infusion Pressor (S.A. Pressor) (Cat. 51787)

Biomedical Instruments Ltd
P.O. Box 26100
Tel Aviv 61260, Israel

Date Evaluated

July 88

Summary

The S.A. Pressor allows quick infusion administration from a collapsible plastic bag without the need to hang the bag over the patient. The S. A. Pressor consists basically of 6 curved, hardened steel plates. The plates, in 2 groups of 3, are covered by a strong synthetic fabric; the 6 plates form 2 large curved plates, fastened at one edge to a common hinge, around which they revolve. A sleeve made from the same synthetic fabric is also attached to this hinge. A long strap is riveted to the free edge of the opposite plate. By pulling the strap, the 2 groups of 3 plates are pivoted to the closed position. The other pairs of steel plates can be closed together by clamps. Because of the elasticity, when closed, the plates apply a continuous squeezing force to the bag inserted in the sleeve, and the squeezing force is exercised until the infusion bag is empty. The S. A. Pressor can be used an estimated 1,000 times and has a minimum shelf life of 10 years when left in the unopened package.

Power Requirements

None.

Procurement

Migada, Inc.
150 E. Olive Ave
Burbank CA 91502

(818) 848-3880

Note

The care provider must monitor and adjust the drip rate as necessary if the S.A. Pressor is used for other than a maximum flow.

Product & Manufacturer

Arm-A-Flow I.V. Flow Regulator

Armour Pharmaceutical Company
Kankakee, Illinois 60901

Telephone: 815-932-6771

Date Evaluated

July 88

Summary

The Arm-A-Flow regulator is a gravity-flow infusion device that uses a pressure-sensitive component in addition to a valve to control intravenous (I.V.) flow. When this regulator is placed between the I.V. administration set and the catheter, it is simply a more accurate way of controlling the I.V. flow instead of using the administration set I.V. tube clamp. In contrast to electronic flow controllers which control the flow by counting the drops, the Arm-A-Flow regulator controls flow by monitoring changes in pressure. The Arm-A-Flow regulator has a pressure-sensitive diaphragm in addition to a valve. This diaphragm automatically readjusts the orifice opening when there is a change in flow so that the difference is accommodated for, and the solution continues to be dispensed at the set rate. The regulator is made of plastic, is disposable and portable, and does not require a power supply. The Arm-A-Flow regulator does not generate a pressure capable of infusion; therefore, maintaining the height of the I.V. bag (60.96 cm (24 in.) - 91.44 cm (36 in.)) and the administration site is essential in a gravity-dependent system.

Power Requirements

None.

Procurement

Manufacturer

Note

The regulator provides a more reliable means of controlling I.V. drip rate especially during field operations, when transporting patients, and when a power supply is not available. However, the regulator is not a replacement for an electronic infusion pump which should be used if one is available. The height of the I.V. bag to the administration site must be maintained if the Arm-A-Flow regulator is used in a gravity-dependent I.V. setup.

Product and Manufacturer

The Emergency and Military Infusion System (EMIS)

Migada, Science Based Industrial Park
P.O. Box 211
Rehovot 7601, Israel

Date Evaluated

July 88

Summary

The dominant factor differentiating the EMIS set from the regular set is the design of the drip chamber which serves as a trap for air bubbles at the same time. The EMIS drip chamber is made of a rigid transparent material. This configuration ensures that after the chamber is partially filled with fluid, there is no contact between the outlet opening and the air bubble, in any possible position of the chamber. Thus the small amount of air left in the drip chamber enables monitoring of the flow when the drip chamber is held in the upright position, but the air does not escape into the circulatory system. The EMIS has a drop/volume ratio of 20 drops/ml (cm^3) and an accuracy of $\pm 10\%$.

Power Requirements

None.

Procurement

Migada Inc.
150 E. Olive Ave
Burbank, CA 91502

(818) 848-3880

Product and Manufacturer

MedSonics Ultrasound Stethoscope

MedSonics
340 Pioneer Way
P.O. Box 7268
Mountain View, CA 94039

Telephone: (415) 965-3333
1-800-227-8076

Date Evaluated

May 1981

Summary

The MedSonics Ultrasound Stethoscope, Doppler blood flow detector, is designed specifically for detecting blood flow in the arterial and deep venous system of the extremities.

Power Requirements: Battery operated.

Procurement

Manufacturer

Note

A diastolic blood pressure reading cannot be obtained with this unit.

Product and Manufacturer

Medtek BPI 420 Blood Pressure/Pulse Monitor

Medtek Corporation
3312 Wiley Post
Carrollton, TX 75006

Telephone: (214) 387-2740
1-800-527-0226 (Outside TX)

Date Evaluated

February 1982

Summary

The Medtek BPI 420 Blood Pressure/Pulse Monitor is a small portable unit that can be readily hand held or permanently mounted to a desk top or wall. It measures systolic and diastolic arterial pressures as well as pulse rate, using an oscillometric technique in conjunction with a microprocessor. The BPI 420 uses a standard adult-size cuff system with Velcro fasteners, inflation bladder, and bulb. Cuff deflation is automatically controlled at a deflation rate of 2.3 min Hz/sec. This unit automatically calibrates itself to the ambient barometric pressure from 1200 ft (366 m) below sea level to 30,000 ft (9,146 m) above sea level. If an operator's error or unit malfunction occurs while in use, a message will be displayed on the front screen displaying the probable cause. With this feature, no erroneous blood pressure or pulse will be given.

The Model BPI 420 Blood Pressure/Pulse Monitor complied with all test requirements. Radiated and conducted emissions were below the limits established by MIL-STD-461B. Leakage currents were within the limits imposed by AFR 160-3 for Class A equipment. After completion of the high temperature storage test, Procedure II, the aluminum panel became unglued from the case at the corners.

The Medtek BPI 420 Blood Pressure/Pulse Monitor can be recommended for use in an aeromedical evacuation environment.

Power Requirements: 115/230 VAC/50-400 Hz or internal battery.

Procurement

Manufacturer

Note

When batteries charge from 115 VAC/400 Hz power, expect 5 hours for charging.

Product and Manufacturer

BioMarine Oxygen Analyzer, Model OA202R

Rexnord-Electronic Products Division
45 Great Valley Parkway
Malvern, PA 19355

Telephone: (215) 647-7200

Date Evaluated

September 1972

Summary

One unit was tested at environmental temperatures of 38°C (100°F), 21°C (70°F), and 16°C (60°F), and relative humidity of approximately 20%, 50%, and 90% at ground level and equivalent altitudes of 2000, 5000, and 8000 ft. Four units were tested at ground level, calibrated first with 100% oxygen and then retested after being calibrated with 20.5% oxygen. The units operated satisfactorily under all test conditions.

If the instrument is being used to analyze oxygen levels below 50%, calibration can be performed in ambient air. If the instrument is being used to analyze oxygen levels above 50%, calibration should be performed using gas mixtures with a known high oxygen concentration or with pure 100% oxygen. Analyzers having a meter that reads in percent oxygen must be recalibrated upon change of altitude. Those having a meter which reads in oxygen partial pressure (mmHg) need not be recalibrated upon change of altitude because of the principle of operation of the analyzers.

Procurement

Manufacturer

Note

The purchase request should specify that the meter display PO_2 in mmHg and that the sensor is for high altitude use.

Product and Manufacturer

BioMarine High Humidity Adapter

Rexnord-Electronic Products Division
45 Great Valley Parkway
Malvern, PA 19355

Telephone: (215) 647-7200

Date Evaluated

August 1976

Summary

Limited test and evaluation was performed on the BioMarine Industries High Humidity Adapter for use with the BioMarine Oxygen Analyzer Sensor. Test results indicate that moisture does not collect on the sensor face during extended periods of use in high humidity environments.

Procurement

Manufacturer. Packaged with the BioMarine Oxygen Analyzer, Model 202R sensor.

Product and Manufacturer

MiniOX III Oxygen Monitor

Catalyst Research
3706 Crondall Lane
Owings Mills MD 21117

Telephone: (301) 356-2936

Date Evaluated

March 1989

Summary

The MiniOX III Oxygen Monitor provides continuous oxygen monitoring in a wide variety of medical applications such as respiratory therapy, oxygen therapy, and neonatology care; including in an airborne environment.

The instrument is microprocessor controlled and monitors oxygen concentrations in the full 0-100% range. Features include high/low audible and visual alarms, easy to read digital displays, touch sensitive keypad, low battery alarms, and sensor malfunction indicator. The microprocessor makes the MiniOX III easy to calibrate and very simple to use.

The galvanic oxygen sensor provides fast response time and maintenance free usage. The sensor should operate at least one year, and the battery should last approximately 2,000 hours. A tee adaptor, used for calibration and inline respirator monitor

ing is provided with each instrument; as is a tee adaptor securing strap, mounting bracket, and carrying case.

Power Requirements

One nine-volt alkaline battery

Procurement

Manufacturer

Note

Due to the decrease in partial pressure of oxygen at altitude, if calibrated in flight, a conversion chart must be used to obtain the same level of oxygenation as that achieved at ground level. The chart was developed by USAFSAM/VNC and should be available whenever the MiniOX III is used in flight.

Product and Manufacturer

BABYbird Infant Ventilator, Model 5900

Medical Products Division/3M

P.O. Box 2007

3101 E. Alejo Rd.

Palm Springs, CA 92262

Telephone: (619) 327-1571

Date Evaluated

June 1979

Summary

The BABYbird Ventilator, Model 5900, operated from ground level to 34,000-ft equivalent altitude without serious deterioration in the waveform pattern. The airway pressure at the lung analogue varied with simulated altitude changes with rapid decompression causing the greatest change in airway pressure. A pressure relief valve in the airway line reduced the effects of rapid decompressions. The breaths per minute delivered by the BABYbird decreased with an increase in equivalent altitude. The oxygen concentrations at the numbered mixer settings remained relatively constant at ground level and 8,000-ft equivalent altitude. Results of temperature tests indicate the ventilator cannot be operated at ambient temperatures below 4°C (40°F).

Power Requirements: Oxygen and compressed air.

Procurement

Manufacturer

Product and Manufacturer

Infant AIRbird Resuscitator

Medical Products Division/3M
P.O. Box 2007
3101 E. Alejo Rd.
Palm Springs, CA 92262

Telephone: (619) 327-1571

Date Evaluated

November 1975

Summary

Results of tests conducted on both models (PN 5852, polyvinyl chloride compression bulb and PN 5852-S, silicone compression bulb) indicated they could be exposed to rapid decompression and extremes of environment without degradation of materials or malfunction during operation. The silicone compression bulb, PN 5852-S, is designated as the one to use if environmental extremes are anticipated, as silicone is not affected by cold. Both units have the capability to deliver high oxygen concentrations when supplemental oxygen is added to the units. Both should be fully assembled to achieve highest oxygen concentrations.

Procurement

Manufacturer

Note

Request the unit with the silicone compression bulb.

Product and Manufacturer

Hope II Infant Resuscitator

OHMEDA
P.O. Box 7550
Madison, WI 53707

Telephone: (608) 221-1511

Date Evaluated

August 1976

Summary

The Hope II Infant Resuscitator is designed for emergency treatment of infants and children having respiratory difficulty. It is a manually operated unit which consists of a self-inflating compression bulb, a bi-directional ball valve assembly, accumulator tube adapter ring, and an oxygen accumulator relief valve set at 40 cm H₂O pressure. The outlet connection of the valve housing will accept either a mask or a 15-mm endotracheal tube connector.

Procurement

Manufacturer

Note

1. The mask is constructed of black, opaque rubber which prevents observation of the mouth and nose during a resuscitative effort.
2. The Hope II Infant Resuscitator is available with or without a magnetic relief valve set at 40 cm H₂O pressure. With the valve set at 40 cm H₂O pressure, overinflation of the infant's lungs should not occur; however, some infants will require a pressure in excess of 40 cm H₂O to adequately inflate their lungs. Both overinflation and underinflation can be equally detrimental or fatal. These factors must be given careful consideration prior to deciding which unit setup (with/without the preset relief valve) is most suited for the intended use.

Product and Manufacturer

AMBU Baby Resuscitator with Paedi Valve, P/N 13 140 71
Carrying Case, Single, P/N 13 033 03

AMBU Inc.
P.O. Box 1271
Danbury, CT 06810

Telephone: (203) 794-1221

Date Evaluated

April 1976

Summary

The AMBU Baby Resuscitator with Paedi Valve, P/N 13 140 71, is designed for emergency resuscitation of children from prematurity through 3 years of age. It consists of a self-filling hand-held compression bulb with a Paedi valve assembly. The valve assembly permits forced insufflation, ambient air, or an air/oxygen mixture that can be delivered with the unit.

Accessories included with the basic unit are the inlet valve for supplemental oxygen, the reservoir tube to increase delivered oxygen concentration, the AMBU OA mask, and the Carrying Case, Single, P/N 13 033 03. Standard face masks, adapters, and endotracheal tubes can also be used with the unit.

Procurement

Manufacturer

Product and Manufacturer

Laerdal Child Resuscitator

Laerdal Medical Corporation
1 Labriola Court
Armonk, NY 10504

Telephone: 1-800-431-1055

Date Evaluated

November 1978

Summary

The Laerdal Child Resuscitator is for use with children from 1 1/2 to 10 years. The Safety Valve prevents pressures in excess of 35 cm H₂O from being delivered unless the valve is manually depressed to allow greater pressure delivery. With the unit completely assembled, oxygen concentrations of almost 100% can be attained with a supplemental oxygen flow of 10 liters per minute.

Procurement

Manufacturer

Product and Manufacturer

Laerdal Infant Resuscitator

Laerdal Medical Corporation
1 Labriola Court
Armonk, NY 10504

Telephone: 1-800-431-1055

Date Evaluated

November 1978

Summary

The Laerdal Infant Resuscitator provides the capability to manually resuscitate premature infants through children two years of age. The Safety Valve prevents delivery of pressure in excess of 35 cm H₂O unless higher pressures are required and delivered by holding the valve in a closed position. Completely assembled and with a supplemental oxygen flow rate of 10 liters per minute, almost 100% oxygen concentrations are attainable.

Procurement

Manufacturer

Product and Manufacturer

Adult AMBU Resuscitator with E-2 Valve and NR Valve

AMBU Inc.
P.O. Box 1271
Danbury, CT 06810

Telephone: (203) 794-1221

Date Evaluated

July 1978

Summary

Results of tests conducted on the unit indicate that it will withstand the stresses of flight without degradation of function. When supplemental oxygen is supplied to the unit, care should be taken to observe the sensitivity of the bag to deflation at flow rates above 10 liters per minute.

Procurement

Manufacturer

Product and Manufacturer

AIRbird Adult Resuscitator with Silicone Bag

Medical Products Division/3M

P.O. Box 2007

3101 E. Alejo Rd

Palm Springs, CA 92262

Telephone: (619) 327-1571

Date Evaluated

July 1978

Summary

Results of tests conducted on the unit indicated that it will withstand the stresses of flight without degradation of function. It should be fully assembled to achieve the highest oxygen concentration when supplemental oxygen is introduced into the unit. Accessory pop-off valve available.

Procurement

Manufacturer

Product and Manufacturer

Hope II Adult Resuscitator with Midas Mask

OHMEDA
P.O. Box 7550
Madison, WI 53707

Telephone: (608) 221-1551

Date Evaluated

July 1978

Summary

Results of tests conducted on the unit indicate it will withstand the stresses of flight without degradation of function. Highest oxygen concentrations are obtained when supplemental oxygen is introduced with the unit fully assembled. The Midas Mask should be used as it has a transparent dome. Care must be taken not to crush the accumulator tube during use as this could create potentially dangerous bag pressures.

Procurement

Manufacturer

Product and Manufacturer

Laerdal Adult Resuscitator

Laerdal Medical Corporation
1 Labriola Court
Armonk, NY 10504

Telephone: 1-800-431-1055

Date Evaluated

July 1978

Summary

Results of tests conducted on the unit indicate that it will withstand the stresses of flight. Highest oxygen concentrations are achieved when the unit is fully assembled, and supplemental oxygen is introduced at a flow rate of at least 10 liters per minute. When not in use, the bag should be properly folded and stored to prevent possible deformity.

Procurement

Manufacturer

Product and Manufacturer

Robertshaw Dual Cylinder Portable Resuscitator

Robertshaw Controls Company
Anaheim Division
333 North Euclid Way
Anaheim, CA 92803

Telephone: (714) 996-6700

Date Evaluated

October 1975

Summary

If utilized in a pressurized aircraft where a decompression could occur, the operator must release the manual control button so that the patient can exhale to reduce the probability of lung trauma.

Procurement

Manufacturer

Product and Manufacturer

Flynn Series III Ventilator with Oxygen Powered Aspirator

O-Two Systems
7 Sinola Court
Novato, CA 94947

Telephone: (415) 892-2131

Date Evaluated

August 1976; February 1980

Summary

The Flynn Series III Ventilator is an effective and dependable method to administer oxygen in an emergency situation. It may be used safely for both adults and children. On the military model, the pressure relief valve is preset to 80 cm H₂O in the ADULT Mode and 40 cm H₂O in the CHILD Mode.

Procurement

Manufacturer or FSN: 6515-01-061-7811

Note

Previously tested as the Marion-Flynn Ventilator with O₂-powered aspirator.

Product and Manufacturer

Military Transport Respirator, Model TXP

Bird Space Technology
Bird Airlodge
P.O. Box 817
Sandpoint, Idaho 83864

Telephone (208) 263-7824

Date Evaluated

August 1989

Summary

This acute care respirator was tested specifically for use by the US Army Institute of Surgical Research, Burn Flight Team at Fort Sam Houston, Texas. Its small size, lightweight design, and fully pneumatic operation make it ideal for rapid transport use. It is a time-cycled respirator designed with a minimum of controls and features. A non-indexed ventilation rate control knob and two push button controls, for delivering manual inspiratory and expiratory breaths, are all the control features located on the ventilator. Delivered tidal volumes are controlled by adjusting the source gas pressure. A mechanical respirometer, Ohmeda part # 220-1800-600, and manual breath count are used to measure delivered volumes and breath rate. A positive end expiratory pressure (PEEP) valve attachment was tested with the respirator and provides PEEP of 1 to 15 centimeters of water. A composite cylinder, Structural Composite Industries part # 1270152-3, and pressure reduction regulator, Ohmeda part # A-50197 is used by the burn team. The cylinder and pressure regulator are carried strapped to the back of a team member using a scuba diver oxygen tank harness.

This system is approved for use in a one-on-one clinical relationship where constant qualified medical surveillance is provided. We strongly suggest potential users consult with the US Army Institute of Surgical Research, Burn Flight Team at Fort Sam Houston, Texas Commercial (512) 221-2943, Autovon 471-2943 prior to use. The composite cylinder is not approved by the Department of Transportation (DOT) for use in a mobile environment. However, the manufacturer has petitioned the DOT for approval. Based on the manufacturer's extensive testing on the cylinder and the burn teams years of usage with no signs of degradation, we recommend a continued waiver for use in aeromedical transport.

Power Requirements

20 to 60 pounds per square inch, gauge (PSIG) oxygen or air

Procurement

Manufacturer

Product and Manufacturer

Bear 33 Volume Ventilator

Bear Medical Systems
2085 Rustin Avenue
Riverside CA 92507

Telephone: (714) 788-2460
(800) 331-BEAR
(800) 843-7812 (California Only)

Date Evaluated:

June 1989

Summary

The Bear 33 is a highly versatile and truly portable adult volume ventilator. Only 8" high (on litter mounting sled), it easily fits the NATO litter, for aeromedical evacuation use. Features include: Digital readout; control, assist control and SIMV modes of ventilation; visible and audible alarm; dedicated meters for both external and internal batteries on the front panel for easy visibility of charge status; oxygen accumulator for enriched oxygen delivery; PEEP compatible for 0 - 20 cm of water; a tamper resistant panel lock that automatically relocks in 15 seconds; non-interchangeable drive lines preventing misconnection; a test button that allows a quick check of displays and the integrity of the LCDs. Also includes a humidifier Model LS 420.

Power Requirements: 120VAC/60 Hz or 12 VDC internal battery.

Procurement

Manufacturer

Notes

1. Though not tested, and therefore not approved, the Bear 33 can also accommodate a 12 VDC external battery.
2. The humidifier has no internal battery, and is powered only by 120 VAC/60 Hz.
3. The audible alarms cannot be heard in flight, and the ventilator should be positioned so that the visual alarms can be seen.

Product and Manufacturer

Ohio Intermittent Suction Unit

OHMEDA

P.O. Box 7550

Madison, WI 53707

Telephone: (608) 221-1551

Date Evaluated

July 1976

Summary

The Ohio Intermittent Suction Unit is a dual purpose (intermittent or continuous vacuum), nonelectric vacuum unit. During the intermittent mode of operation, the ON and OFF time cycles are independently adjustable. They are preset at the factory to provide 15 seconds ON and 8 seconds OFF during each complete time cycle. This assures that the drainage will always tend to be moved away from the patient toward the collection bottle. An Allen wrench is provided with the unit to adjust the ON/OFF time cycle. Available vacuum from the unit is adjustable throughout the range of zero to 200 mmHg. The amount of vacuum present when the unit is adjusted to FULL VACUUM is dependent on the vacuum source.

Power Requirements: An external vacuum supply source provides power for the mechanical action of the unit. The unit will operate on line vacuums from 12 inHg (304.8 mmHg) to 29 inHg (736.6 mmHg).

Procurement

Manufacturer

Note

Minimum vacuum pressure for the unit to operate properly at sea level cabin pressure is at least 300 mmHg. Minimum vacuum pressure at 8,000-ft cabin pressure is at least 350 mmHg. To supply the required vacuum pressure, the C-9A vacuum pump may have to operate throughout the entire flight profile.

Product and Manufacturer

Rico Model RS-6 Fixed/Portable Suction System

Rico Suction Labs Inc.
2338 W. Front St
Burlington, NC 27215

Telephone: (919) 584-1826

Date Evaluated

June 1976

Summary

The Rico Model RS-6 Fixed/Portable Suction System provides continuous vacuum and is effective in oropharyngeal and tracheobronchial suctioning procedures. When operated correctly, the unit can provide in excess of 600 mmHg vacuum. When the tubing is open, it can provide a free air flow rate of 30 liters (air) per minute.

Power Requirements: This unit will operate from the ambulance engine vacuum or double-acting hand pump. When the hand pump is used to operate the unit, performance of the Rico Model RS-6 will be dependent upon the dexterity and strength of the operator.

Procurement

Manufacturer

Product and Manufacturer

Impact Model 305GR Portable Aspirator

Impact Instruments Inc.
196 Leonia Avenue
Bogota, New Jersey 07603

Telephone: (201) 343-3004

Date Evaluated

Oct 85

Summary

Based on the results of the tests conducted, the Impact Model 305GR Portable Aspirator is acceptable for use onboard aircraft used for aeromedical evacuation. The Impact Model 305GR is a portable aspirator capable of both oropharyngeal and tracheal suctioning. It is lightweight and comes enclosed in a self-contained polyethylene carrying case. The vacuum can be adjusted from 0 to 550 mmHg. The Model 305GR is similar to the Impact Model 308M Portable Aspirator. The major difference between the models is that the 308M has an internal transformer/rectifier for operation on 110 VAC/50-400 Hz.

Power Requirements: The 305GR can be operated from an internal rechargeable battery, or external 12 VDC. The only charger completely tested and approved is charger, P/N 810-0001-00. This charger operates on 120 VAC/60 Hz and has a three-prong plug.

Procurement

Manufacturer

Note

VNC strongly suggests that users be instructed to keep the lid of the Impact open at all times when the unit is being used. A potential electrical hazard exists if the aspirate canister overflows from the exhaust port when the lid is closed (ref. T&E Report Oct 85, para 4a (5)). This warning will be stated in the operator's manual. An additional warning sticker should be placed on the unit itself as a reminder to all users.

Product and Manufacturer

Impact Model 308M Portable Aspirator

Impact Instruments Inc.
196 Leonia Avenue
Bogota, New Jersey 07603

Telephone: (201) 343-3004

Date Evaluated

Initial Report Mar 85, Supplemental Report Aug 85

Summary

Based on the results of the tests conducted, the Impact Model 308M Portable Aspirator is acceptable for use onboard aircraft used for aeromedical evacuation. The Impact Model 308M is a portable aspirator capable of both oropharyngeal and tracheal suctioning. It is lightweight and comes enclosed in a self-contained polyethylene carrying case. The vacuum can be adjusted from 0 to 550 mmHg.

Power Requirements: The 308M can be operated from an internal rechargeable battery, 115 VAC/50-400 Hz or external 12 VDC.

Procurement

Manufacturer

Note

VNC strongly suggests that users be instructed to keep the lid of the Impact open at all times when the unit is being used. A potential electrical hazard exists if the aspirate canister overflows from the exhaust port when the lid is closed (ref. T&E Report Mar 85, para 4a (5)). This warning will be stated in the operator's manual. An additional warning sticker should be placed on the unit itself as a reminder to all users.

Product and Manufacturer

Ohio Air-Vac Transport Incubator with Battery Pak

OHMEDA
P.O. Box 7550
Madison, WI 53707

Telephone: (608) 221-1551

Date Evaluated

June 1975

Summary

The Ohio Air-Vac Transport Incubator meets the safety and operational requirements for use onboard aeromedical evacuation aircraft. The incubator is a Class A type of equipment. A sticker label stating "Temperature Warning: check infant compartment temperature" should be in place next to the temperature warning light on the heater and should cover up the "high temp warning." The affected units were not produced prior to 1975 and have serial numbers beginning with AKH.

Power Requirements: 110 VAC/60-400 Hz, 12 VDC, 24 VDC, and battery.

Procurement

Manufacturer, both incubator and NiCad Battery Pak.

Note

Incubator - P/N 3043226-9000
Nicad Battery Pack - P/N 217-3810-800

Product and Manufacturer

Airborne Life Support Systems (ALSS) Infant Transport Incubator, Model ALSS 185

Narco Bio-Systems
7651 Airport Boulevard
Houston, Texas 77061-4098

Telephone: (800) 433-5615

Date Evaluated

October 1988

Summary

The Airborne Life Support Systems (ALSS) Infant Transport Incubator, Model ALSS 185, is designed to provide a controlled environment to support an infant's thermal need while being transported, by circulating warmed, humidified air through the infant chamber. The battery operates the unit for up to 3.5 hours (following 6 hours of charging on 110 VAC/60 Hz), and up to 3 hours (following 6 hours of charging on 110 VAC/400 Hz), while maintaining an infant chamber temperature of 37° Celsius. A digital temperature display along with numerous alarm conditions are incorporated into the unit.

Power Requirements

115 VAC/50 - 400 Hz (3 Amps), 12 - 14.5 VDC (10 Amps), or an internally mounted 12 volt 24 ampere hour (AH) sealed lead/acid rechargeable battery.

Procurement

Manufacturer

Note

This unit is susceptible to dramatic increases in temperature within the infant chamber when exposed to direct sunlight. This can be avoided by covering the clear plexiglass hood assembly with an item such as a folded cotton bed sheet.

Unless absolutely necessary, do not remove the hood assembly as it can separate and fall on the infant, the aircraft floor, or onto another patient or crewmember.

The USAF Occupational and Environmental Health Laboratory (OEHL) at Brooks AFB determined the noise levels generated in the incubator on the C-9, C-12, C-21, C-130, and C-141 aircraft along with the UH-1 helicopter, were not loud enough to produce a significant risk to hearing damage due to the relatively short period of exposure. Currently, there is no commercially available hearing protection equipment for infants. OEHL advises not taping ear plugs over the infants' ear as it is of little to no value.

An oxygen analyzer should be used whenever supplemental oxygen is used with the incubator.

Item was tested at request of 375 AAW/SGNL, Scott AFB.

Product and Manufacturer

Ohio High Performance Air Compressor

OHMEDA
P.O. Box 7550
Madison, WI 53707

Telephone: (608) 221-1551

Date Evaluated

August 1979

Summary

The Ohio High Performance Air Compressor is designed to supply a constant flow of air for respiratory therapy devices which require an external source of compressed air.

Power Requirements: 115 VAC/60 Hz. Unit not tested on 400 Hz.

Note

1. The Ohio High Performance Air Compressor is conditionally acceptable for use in aeromedical evacuation aircraft and ARRS helicopters. This unit does not have a current overload protector and this could present a hazardous condition. When ordering this item from the manufacturer, request an adequate current overload protector be installed. The manufacturer has agreed to satisfy this request.

2. Special precautions should be taken to identify pressure and flow characteristics of this compressor at altitude from Figure 1, in the T&E report, before using it with any medical equipment. The maximum flow rate at 50 psi is 28 liters per minute at sea level and 20 liters per minute at 8,000 ft. The unit was not designed for ventilator use and if you plan to use it with a ventilator, you should insure the air flow is adequate for your ventilator.

Procurement

Manufacturer

Product and Manufacturer

Timeter Aridyne 3500 Medical Air Compressor System

Timeter Instrument Corporation
2501 Oregon Pike
Lancaster, PA 17801

Telephone: (717) 569-2695
1-800-233-0258

Date Evaluated

March 1980

Summary

The Aridyne 3500 Medical Air Compressor System is designed to supply a continuous source of dry compressed air for respiratory therapy devices which require an external source of compressed air. The system will supply 45 liters per minute (LPM) at 50 psig at ground level. The moisture removal system is automatic, and the moisture removed is drained into a container in the bottom of the cabinet where it evaporates into the atmosphere. The unit is mounted on swivel castors to permit easy movement.

The results of the tests performed on the Timeter Aridyne 3500 Air Compressor indicate that it is suitable for use in aeromedical evacuation aircraft up to 8,000-ft altitude. The unit will not provide 50 psig pressure at altitudes above 8,000 ft. A pressure of 50 psig can be maintained through a reduction of flow up to 8,000 ft, but both pressure and flow decrease as altitude is increased.

Power Requirements: 110 VAC/60 Hz. Unit not tested on 400 Hz.

Procurement

Manufacturer

Note

1. Maximum flow rate from this ventilator is 45 liters per minute at sea level and 41 liters per minute at 8,000 ft. If you plan to use this unit to power a ventilator, you should insure the air flow is adequate for the ventilator.
2. Special precautions should be taken to identify pressure and flow characteristics of this compressor at altitudes from Figure 1 in the T&E report before using it with any medical equipment.

Product and Manufacturer

Stryker Wedge Turning Frame, Model 124

Stryker Corporation
420 Alcott Street
Kalamazoo, MI 49001

Telephone: (616) 381-3811

Date Evaluated

December 1971; February 1972

Summary

Initial test and evaluation indicated that the Stryker Wedge Turning Frame, Model 124, was unacceptable for use onboard aeromedical evacuation aircraft. In February 1972, a comparison evaluation of FSN 6530-929-1975 Turning Frame, Orthopedic Bed, Stryker (Wedge Frame) and FSN 6530-680-0501 Turning Frame, Orthopedic Bed, Stryker (A-Frame) as they are now supplied by the Defense Support Center was accomplished. Results of the comparison evaluation indicated that the Stryker Wedge Frame was equal to or better than the A-Frame with the exception of three areas: stability, standard traction devices, and instructions. The Stryker Corporation resubmitted a frame with modifications that make it equal to the standard A-Frame and acceptable for use onboard aeromedical evacuation aircraft.

Procurement

Manufacturer or FSN 6530-926-1975 (modified)

Product and Manufacturer

Compur M 1100 Mini-Centrifuge

Ames Division, Miles Laboratories, Inc.
P.O. Box 70
Elkhart, IN 46515

Telephone: (219) 264-8645

Date Evaluated

June 1981

Summary

Compur M 1100 Mini-Centrifuge is a hand-size, lightweight centrifuge, designed to give accurate hematocrit readings and can be used for plasma extraction. This unit is acceptable for use in aeromedical evacuation aircraft and ARRS helicopters.

Power Requirements: Six (6) C-size batteries.

Procurement

Manufacturer

Product and Manufacturer

Compur M 1000 Mini-Photometer

Ames Division, Miles Laboratories, Inc.
P.O. Box 70
Elkhart, IN 46515

Telephone: (219) 264-8645

Date Evaluated

June 1981

Summary

The Compur M 1000 Mini-Photometer is a hand-size, lightweight photometer, designed for hemoglobin determinations and erythrocyte counts. The Mini-Photometer is acceptable for use in aeromedical evacuation aircraft and ARRS helicopters.

Power Requirements: Five (5) AA size batteries.

Procurement

Manufacturer

Product and Manufacturer

French Vacuum Immobilizer Litter

Coquille International
35, rue du Marechal De Lattre de Tassigny
P.O. Box Nr 3
67150 ERSTEIN (France)

Date Evaluated

March 1983

Summary

The Vacuum Immobilizer consists of an air-tight envelope containing plastic balls. On evacuation of the air, it becomes a lightweight rigid structure for the immobilization and transportation of an injured patient. Based on the results of the tests, the Coquille International Vacuum Immobilizer cannot be considered acceptable for use onboard fixed-wing aircraft used for aeromedical evacuation, because it did not pass the decompression tests.

The Immobilizer can be considered acceptable for use onboard rotary-type aircraft with the caution that the internal pressure/rigidity of the unit must be frequently monitored. The Immobilizer will tend to soften with altitude, but the rigidity is easily adjusted by evacuating more air during ascent. With pressure adjustment during flight, the Immobilizer can be used onboard rotary aircraft if secured on a standard NATO litter.

Recommendation for added patient safety would be the addition of an in-line vacuum gauge to monitor the internal pressure of the Immobilizer. Without an in-line gauge, the Immobilizer feels rigid with as little as 100-200 mmHg; therefore, the mattress could start losing rigidity at an altitude of 4,000 ft if 100 mmHg is drawn off.

Procurement

Manufacturer

Product and Manufacturer

Veriflo Oxygen Regulator, Model 747

Veriflo Corporation, Medical Product Division
250 Canal Blvd
Richmond, CA 94804

Telephone: (415) 235-9590

Date Evaluated

August 1983

Summary

The Veriflo Oxygen Regulator, Model 747, is acceptable for aeromedical service. The special model, P/N 1900231, is well suited for use onboard the C-141B aircraft. It can be mounted in all seven therapeutic outlets and mounted on the Therapeutic Oxygen Manifold System with minor changes in the inlet and outlet fittings. The model 747-346-PG can be used for compressed air service. It is identical in construction but has the CGA and DISS fittings for compressed air. The standard model 747-540-PG can be used when it is necessary to monitor the source pressure; however, it does not meet the same space requirements as the special model for mounting on the C-141 aircraft.

Procurement

Manufacturer

Product and Manufacturer

Ohmeda Low Maintenance Battery Pack, Stock# 217-3813-910

Ohmeda
9065 Guilford Road
Columbia, MD 21046-1801

Telephone: (301) 381-2555

Date Evaluated

January 1987

Summary

The Ohmeda (formerly Ohio) Low Maintenance Battery Pack is a portable, rechargeable battery specifically intended to power the the Ohmeda Air-Vac Transport Incubator. It consists of a single 12 VDC battery and charging module mounted in a two-handled carrying case, incorporating a receptacle that permits attachment of the six-pronged incubator power plug. The non-spill, lead acid battery is completely sealed and maintenance free. The Ohmeda Low Maintenance Battery Pack is an acceptable, inexpensive alternative to the Ohmeda Nicad Battery Pack, Stock# 217-3810-800, previously evaluated.

Power Requirements

120 VAC/50-400 Hz, 3 Amperes

Procurement

Manufacturer

Note

The battery charge time, from full discharge to full charge, is 14-20 hours. A fully charged battery will provide a hood temperature of 90°F (32.2°C) in an ambient air temperature of 70°F (21.1°C) for at least 3 1/2 hours, and provide 1 1/4 hours of operation with the heater continuously operating.

Product

Aerovac Extracorporeal Membrane Oxygenation (ECMO) System

Date Evaluated

October 1986

Summary

The Aerovac Extracorporeal Membrane Oxygenation (ECMO) System is a transportable heart-lung bypass device used in the treatment of neonate and infant respiratory failure. It was designed for use by the Wilford Hall USAF Medical Center, Neonatal Intensive Care Unit, ECMO Transport Team, and consists of many specialized health devices, support equipment, and medical supplies from numerous manufacturers. As of the date of this evaluation, the Wilford Hall USAF Medical Center is the only USAF medical treatment facility that provides ECMO services. Based on the tests conducted by both USAFSAM/VNC and Wilford Hall USAF Medical Center personnel, the system is acceptable for use on board the Military Airlift Command C-9A aircraft.

Product and Manufacturer

Headset Communication System, Model 7800H

Remic Corporation
P.O. Box Box 1446
Elkhart, Indiana 46515

Telephone

(219) 293-4257

Date Evaluated

March 1989

Summary

The Model 7800H is a wireless communication headset used by aeromedical evacuation crewmembers (AECM) while on C-130 and C-141 aircraft. It has a transmission frequency of 49.86 megahertz. During our initial testing, the transmission output power created excessive electromagnetic noise which interfered with aircraft communications. However, the manufacturer has modified current production models by reducing transmission output power to acceptable levels. A label stating certification for aeromedical evacuation must be on each headset. If your headset has no such label, contact the manufacturer.

Power Requirements

9 Volt Alkaline Transistor Battery

Procurement

Manufacturer

SECTION II

MEDICAL EQUIPMENT ITEMS THAT ARE ACCEPTABLE FOR USE ONBOARD AEROMEDICAL
EVACUATION AIRCRAFT BUT ARE NO LONGER AVAILABLE FROM THE MANUFACTURER.

Product

Life Pak 3 Portable Battery Operated Defibrillator
Nonfade Cardioscope, and Synchronizer, PN 09-00153-0
RFI Option, PN 09-10279-0
Charge Pak, PN 09-10220-0

Date Evaluated

December 1974

Summary

The basic Life Pak 3 unit (no telemetry modulator) may be used onboard aeromedical airlift aircraft only if, when purchased, the RFI option (RFI Shielding) is obtained with the basic unit, and the unit is operated from its internal battery pack. Under these conditions, the Life Pak 3 unit complies with MIL-STD-461A emission limits. When the Life Pak 3 unit is operating from its internal battery pack, leakage current is not present. However, when the Life Pak 3 unit is used with the Charge Pak and operated from 115 VAC power, leakage current exceeds the 10 microamperes specified in paragraph 4.8.1 of the Association for the Advancement of Medical Instrumentation (AAMI) Safety Standard for electromedical apparatus, if the third wire (ground) of the Charge Pak AC cable is broken or disconnected. Therefore, the Life Pak 3 unit, when operating from 115 VAC, should not be used on or near an electrically susceptible patient (a patient with probes, catheters, or other conductive paths from outside the body into the thorax) unless, prior to use, the third wire (ground) of the Charge Pak AC cable and AC outlet power source are checked and found to have a low resistance continuity.

Note

Replacement parts available from the manufacturer:

Physio-Control Corporation
11811 Willows Rd.
Redmond, WA 98052

Telephone: 1-800-426-8047



Product

Life Pak 4 ECG Monitor, Tapewriter and Defibrillator
PN 09-00264
Charge Pak, PN 09-11415

Date Evaluated

March 1975

Summary

The two units passed all environmental tests including vibration, rapid decompression, and electromagnetic compatibility tests. In accordance with para 4.2.2, Association for the Advancement of Medical Instrumentation (AAMI), Safe Currents Limits Standard (April 1974), the Life Pak 4 and Charge Pak unit are classified as equipment having "nonisolated patient connections." The Life Pak 4 unit does not exceed the leakage current limits specified by Table 4.3.1 of the AAMI Standard, when the unit is operating from its self-contained battery pack. The unit does not exceed the leakage current limits when operating from 115 VAC/400 Hz, using the Charge Pak unit, and with the third wire of the Charge Pak unit open. However, the unit does exceed the leakage current limits when operating from 115 VAC/400 Hz, using the Charge Pak unit and with the third wire of the Charge Pak unit open. The Life Pak 4 tapewriter uses thermo writing (heat sensitive) chart paper, Physio-Control No. 09-100-60, that is 48 mm wide having a 45 mm grid.

Note

Replacement parts available from the manufacturer:

Physio-Control Corporation
11811 Willows Rd.
Redmond, WA 98052

Telephone: 1-800-426-8047

Product

Physio-Control Electrocardiograph Recorder
PN 09-000143

Date Evaluated

December 1974

Summary

The Physio-Control ECG Recorder generates radiated and conducted emissions that exceed the emission limits specified by MIL-STD-461A. Modifications were made to the recorder in order to suppress or reduce the emissions. The modifications reduced the radiated emissions, did not reduce the conducted emissions, and increased the leakage current on the patient leads. Rather than modifying the recorder, a waiver was requested from ASD/ENAMA, Wright-Patterson AFB, Ohio, that would permit use of the recorder without modifications onboard aircraft. The waiver was granted August 1974. When the recorder is operating from its self-contained battery pack, leakage current does not have to be considered. However, when the recorder is operating from 115 VAC/60-400 Hz, leakage current exceeds the 10 microamperes specified in paragraph 4.8.1 of the Association for the Advancement of Medical Instrumentation (AAMI) Safety Standard for electrical apparatus. Leakage current will be present only if the third wire (ground) of the recorder AC power cable is broken, disconnected, or has a high-resistance continuity. The recorder, when operating from 115 VAC/60-400 Hz, should not be used on or near an electrically susceptible patient (a patient with probes, catheters, or other conductive paths from outside the body into the thorax) unless, prior to use, the third wire (ground) of the recorder AC cable and AC outlet are checked and found to have a low-resistance (less than 0.15 ohms) continuity.

Power Requirements: 115 VAC/60-400 Hz or battery.

Note

Replacement parts available from the manufacturer:

Physio-Control Corporation
11811 Willows Rd
Redmond, WA 98052

Telephone: 1-800-426-8047

Product

Datascope M/D3 Monitor, Defibrillator/Synchronizer, Recorder and Support Module II

Date Evaluated

January 1980

Summary

The Datascope M/D3 is an integral Monitor, Defibrillator/Synchronizer and Recorder. It can be fully battery operated or, with Support Module II, can be AC line operated. The M/D3 features a full-sized, nonfade, 12.7-cm (5-inch) diagonal monitor screen. The ECG pattern can be acquired through the look-thru defibrillator paddles or by a patient cable.

All leakage currents were within the limits of AFR 160-3 for Class A devices. The M/D3 may be used on electrically susceptible patients. Based on the results of the tests conducted, the Datascope M/D3 can be considered acceptable for use in aircraft used for aeromedical evacuation.

Power Requirements: 115 VAC/60-400 Hz or battery.

Note

1. Silver interior shielding must be present for EMI shielding.
2. Replacement parts available from the manufacturer:

Datascope Corporation
580 Winters Ave.
Paramus, N.J. 07652

Telephone: (201) 265-8800

Product

Datascope Dual Trace Physiological Monitor, Model 850M

Date Evaluated

July 1973

Summary

The Datascope Dual Trace Physiological Monitor, Model 850M, is a battery-operated monitor. When operated from the internal battery supply, it may be used on an electrically susceptible patient. However, if the unit's battery is being charged, or if it is interconnected to a defibrillator, it cannot be used on or near an electrically susceptible patient.

Note

Replacement parts available from the manufacturer:

Datascope Corporation
580 Winters Ave.
Paramus, N.J. 07652

Telephone: (201) 265-8800

Product

Datascope Physiological Monitor, Model 850

Date Evaluated

July 1972

Summary

The Datascope Model 850, Dual-Trace Physiological Monitor, modified to secure printed circuit boards and transformers and to lengthen wires from input selector switch to input of the amplifier printed circuit board, is acceptable for use onboard aeromedical evacuation aircraft. The unit cannot monitor the patient during defibrillation.

Note

Replacement parts available from the manufacturer:

Datascope Corporation
580 Winters Ave.
Paramus, N.J. 07652

Telephone: (201) 265-8800

Product

Datascope Resuscitron DC Defibrillator, Model 680

Date Evaluated

July 1972

Summary

The Datascope Resuscitron DC Defibrillator, Model 680, with serial numbers 2049 and higher, does not expose the patient to an electrical hazard. Serial numbers below 2049 may expose the patient to an electrical hazard resulting in burns. This danger does not exist if the unit is operated in the battery mode (unit not plugged in AC outlet).

Note

Replacement parts available from the manufacturer:

Datascope Corporation
580 Winters Ave.
Paramus, N.J. 07652

Telephone: (201) 265-8800

Product

Amb Pak 450 SL-AF Monitor, Defibrillator/Synchronizer, Recorder, and Battery Charger

Date Evaluated

December 1979

Summary

The Amb Pak 450 SL-AF is a portable, battery-operated unit, consisting of a removable 12.7-cm (5-inch) oscilloscope ECG monitor, a defibrillator/synchronizer with all controls located on the paddles, and a recorder. It has a separate battery charger that connects to a receptacle exterior of the main case. The ECG pattern can be acquired through the paddles or patient cable.

All leakage currents were within the limits of AFR 160-3 for Class B devices when the battery charger is connected to the Amb Pak. In this mode, the unit cannot be used on electrically susceptible patients as defined in AFR 160-3.

Based on the results of the tests conducted, the MRL Amb Pak 450 SL-AF Monitor/Defibrillator System can be considered acceptable for use onboard aircraft used for aeromedical evacuation missions.

Power Requirements: 115 VAC/50-400 Hz (for battery charger) or battery.

Note

Replacement parts available from the manufacturer:

Medical Research Laboratories, Inc.
7450 Natchez Ave
Niles, IL 60648

Telephone: (312) 792-2666

Product

Amb Pak Model 500/AT-AF Physiological Monitor

Date Evaluated

September 1975

Summary

The unit passed all environmental tests including vibration, rapid decompression and electromagnetic compatibility. In accordance with paragraph 4.2.3, Air Force Regulation 160-3, the Amb Pak is classified as equipment having "non-isolated patient connections." When operating from internal battery pack or 115 VAC/60 Hz power with the third wire of the power cable open, the Amb Pak unit does not exceed the leakage current limit specified by the Air Force Regulation. When the unit is operating from 115 VAC/400 Hz power with the third wire of the power cable open, the Amb Pak does not exceed the leakage current limits specified in the Air Force Regulation. The Amb Pak tapewriter uses thermo writing (heat sensitivity) chart paper, standard 63, with a 50-mm grid width.

Note

1. The AC power mode of defibrillator operation should be used only if the defibrillator batteries are defective or fully discharged. It would not compromise patient/user safety, but could interfere with aircraft avionics systems.
2. Synchronizer capability is required.
3. Replacement parts available from the manufacturer:

Medical Research Laboratories, Inc.
7450 Natchez Ave.
Niles, IL 60648

Telephone: (312) 792-2666

Product

Birtcher Electrocardiograph Recorder, Model 355

Date Evaluated

December 1971

Summary

Tests performed on one Birtcher Electrocardiograph Recorder, Model 355, modified to use a three-wire power cord, indicate that the unit is acceptable for use onboard aeromedical evacuation aircraft. However, the recorder cannot be used on or near an electrically susceptible patient.

Note

No replacement parts available.

Product

Burdick ECG Recorder, Model EK-4

Date Evaluated

August 1973

Summary

The Burdick ECG Recorder, Model EK-4, is acceptable for use onboard aeromedical evacuation aircraft. It exceeds the 10 microampere maximum specified in AFR 160-3, and should not be used on or near an electrically susceptible patient.

Note

A few replacement parts are still available from the manufacturer:

Burdick Corporation
15 Plumb Street
Milton, WI 53563

Telephone: 1-800-356-0701

Product

Burdick DC180M Defibrillator/Monitor, with serial numbers 020003 and below

Date Evaluated

February 1982

The Burdick is a completely portable emergency system, well-suited for vehicle or aeromedical patient transport. The battery pack is capable of supplying approximately 70 maximum energy discharges before recharging is necessary. The defibrillator has synchronization capabilities. All controls, ECG outlet, fuses, and the ECG writer are located on the front of the unit.

The DC180M utilizes a CS-615 Monitor featuring a multi-lead, non-fade freeze frame monitor, with digital heart rate meter and a battery pack. The monitor can be removed from the DC180M defibrillator unit and used separately to monitor a patient. It is powered by 12, 24, or 28 VDC and incorporates a rechargeable battery pack that operates the unit for approximately 7 hours.

Power Requirements: 12, 24, 28 VDC, 230/115 VAC/60 Hz (400 Hz not tested) or internal batteries.

Recommended for aeromedical evacuation with the following changes:

1. AC input line filters be relocated next to the front panel entrance of the power cable.
2. All flat cable connectors be provided with some type of fastening device.
3. Users should be aware of its susceptibility to AC power disturbances and the difficulty in securing the defibrillator to a litter.

Note

1. Only Burdick DC180M Defibrillator/Monitors with serial numbers 020003 and below are approved for inflight use.
2. Replacement parts are available from the manufacturer. However, if repairs are accomplished, the unit should be reevaluated to ensure EMI is within military specifications.

Burdick Corporation
15 Plum St.
Milton, WI 53563

Telephone: 1-800-356-0701

Product

Tektronix Physiological Monitor, Type 410

Date Evaluated

January 1972

Summary

The Tektronix Type 410, Physiological Monitor, is acceptable for routine use on aeromedical aircraft. The physician-in-charge and the user organization should be cognizant that the unit will probably be rendered inoperable if a rapid decompression of the aircraft cabin should occur. The Type 410 Physiological Monitor should not be used for patients having devices whose terminal end is introduced into the thorax and is conductively connected to a point accessible outside the body (such as a probe, catheter, or electrode), because of the excessive leakage currents from the monitor.

Note

A few replacement parts are still available from the manufacturer:

Tektronix, Inc.
P.O. Box 500
Beaverton, OR 97005

Telephone: (503) 644-0161

Product

Monopulse 807B Defibrillator with Electrocardioscope, Pacemaker, and Synchronizer

Date Evaluated

February 1971

Summary

The Monopulse 807B is acceptable for routine use on aeromedical aircraft. The physician-in-charge and the user organization should be cognizant that the electrocardioscope will probably be rendered inoperable if a rapid decompression of the cabin should occur.

Note

No replacement parts available.

Product

Hewlett-Packard Neonatal Monitor, Model 78260A

Date Evaluated

May 1978; August 1978

Summary

The Hewlett-Packard Neonatal Monitor, Model 78260A, provides the capability to monitor heart rate and respiratory rate simultaneously and provides an oscilloscope display of these parameters. It provides alarm systems for both parameters. The Heart Rate Module must be modified to reduce radiated emissions.

Power Requirements: 115 VAC/50-60 Hz.

Note

Some replacement parts are available from the manufacturer:

Hewlett-Packard Medical Supply Division
300 Minuteman Rd.
Andover, MA 01810-1087

Telephone: (617) 682-1500
1-800-225-0230

Product

Extracorporeal Infusion Pump, Models 1203 & 1211

Date Evaluated

June 1976

Summary

The following modifications are strongly recommended to improve the safety and serviceability of the pump series.

1. Adapt Empty Bottle Detector so that IV tubing remains horizontal to the detector, with the bottom tubing wall resting against the bottom of the detector groove. This will ensure that all air bubbles will be detected.
2. Add dummy plug to allow pump to continue to operate should the detector become nonoperational. It is not to be used to circumvent an operational detector.
3. Add signal light to warn when detector is not in use.
4. Add clip to secure Empty Bottle Detector to pump housing for storage.
5. Fasten cable at detector housing so that detector cannot rotate about housing.

Note

No replacement parts available.

Product

Blount Inhalation Therapy Equipment

- a. Twin-O-Vac, Model 3100
- b. Mist-Viva Respirator, Model 3500,
- c. Oxygen Flowmeter, Model 3700,
- d. Humidifier, Model 3750

Date Evaluated

August 1972

Summary

Based on tests of a single unit, the products were tested and approved.

The oxygen flowmeters showed increased inaccuracies at altitude. At ground level, the flowmeters indicated flow rate was greater than the measured flow rate by as much as 11%. At a 4000-foot equivalent altitude, the flowmeters indicated flow rate was less than the measured flow rate by as much as 46%.

Note

No replacement parts available.

Product

Ultrasonic Monitor, "Hemosonde," Model 2300

Date Evaluated

August 1973

Summary

The inflight patient monitoring/blood pressure measurement device will provide aeromedical airlift personnel with the capability to determine blood pressure while inflight.

Clinically, the device provides a method of determining the indirect blood pressure while in a high ambient noise environment, comparable in accuracy to those made with a standard sphygmomanometer and stethoscope in a clinical environment.

Note

Replacement parts available from the manufacturer:

Technology Inc.
300 Breesport
San Antonio, TX 78216

Telephone: (512) 349-3925

Product

Biomega Blood Pressure/Pulse Monitor, Model 423B

Date Evaluated

September 1981

Summary

The Biomega 423B is a microprocessor-based portable pressure and pulse measurement device used for the noninvasive determination of systolic and diastolic blood pressure and pulse rate. This instrument is based on the oscillometric principle and incorporates an artifact rejection scheme which can ignore most simple patient movements. Use of this principle eliminates the need for a stethoscope or microphone to listen for Korotkoff sounds. Hence, standard cuffs are used and readings are obtainable in high ambient noise environments and under adverse patient conditions.

Based on the results of the tests conducted, the Biomega Blood Pressure/Pulse Monitor, Model 423B can be considered acceptable for use onboard both fixed and rotary wing aircraft used for aeromedical evacuation. It should be noted that a careful technique for determining the blood pressure must be adopted as outlined under APPLICATIONS in the Operations Manual. The patient's arm should not be allowed to rest on the litter or arm rest of the seat but must be supported free of these areas while taking the blood pressure.

Power Requirements: 115 VAC/60 Hz (400 Hz not tested) or internal batteries.

Note

Replacement parts are available from the manufacturer:

Biomega Corporation
3622 Northeast Fourth Street
Gainesville, FL 32601

Telephone: (904) 376-8751

Product

Sphymetrics Infrasonde Electronic Blood Pressure Monitor, Model M3010

Date Evaluated

June 1980

Summary

The Infrasonde Model M3010 is an electronic sphygmomanometer which comprises a system for measuring both the systolic and diastolic blood pressures using the pulse detection method. Unique pulse-processing circuitry in the M3010 Monitor modulates the tones to help the operator better distinguish those that represent systolic onset and diastolic endpoint. Sensitivity is adjustable over a wide range to cope with patients of all ages and conditions. The monitor goes on and off automatically with cuff inflation and deflation, eliminating the need for an on-off switch.

Based on the results of the tests conducted, the Infrasonde Blood Pressure Monitor, Model M3010, can be considered acceptable for use onboard fixed wing aircraft used for aeromedical evacuation. The unit, however, is not recommended for use onboard AARS/MAST helicopters.

Power Requirements: Internal batteries.

Note

Replacement parts are available from the manufacturer:

Sphymetrics, Inc.
6311 DeSoto Ave.
Suite J
Woodland Hills, CA 91367

Telephone: (213) 827-9000

Product

Aquapak Nebulizer Model 500, with 921 Adapter and 091 Aquatherm Heating Unit

Date Evaluated

December 1974

Summary

The Aquapak Nebulizer Model 500 emissions exceed the radiated and conducted emission limits as specified by MIL-STD-461A. The Aquapak Nebulizer with the Aquatherm Heater may be used on or near an electrically susceptible patient without danger of exposing the patient to leakage current. When the Aquapak Nebulizer is disassembled, metal parts of the Aquatherm Unit are exposed. If the third wire (ground) or outlet ground is disconnected, broken, or has a high-resistance continuity, leakage current is present and becomes exceedingly high when the heater is inverted.

Power Requirements: 115 VAC/50-400 Hz.

Note

1. Waiver for Electromagnetic Compatibility (EMC) deficiency has been granted by ASD/ENAMA, Wright-Patterson AFB, Ohio, 6 Nov 74.

2. Only replacement parts for the 091 Aquatherm Heating Unit are available from the manufacturer:

Respiratory Care Inc.
2420 E. Oakton
Arlington Heights, IL 60005

Telephone: (312) 259-7400

Product

bird Mark 10 Ventilator

Date Evaluated

January 1967

Summary

The bird Mark 10 Ventilator is an automatic assistor-controller, pressure-cycled ventilator with a high range of versatility. It possesses the absolute requirements of pressure, flow, timing, and phasing, and has the very desirable terminal flow accelerator to compensate for leaks. The oxygen percentage delivered is stated to be 40-60%, depending on flow, but it may run somewhat higher. To deliver near 100% oxygen, one must flow oxygen over the air intake filter. The bird Mark 10 Ventilator is compact, lightweight, and operates in any position, and in extremes of temperature. Its function is not appreciably altered by moderate decrease in atmospheric pressure.

Note

Replacement parts are available from the manufacturer:

Medical Products Division/3M
P.O. Box 2007
3101 E. Alejo Rd.
Palm Springs, CA 92262

Telephone: (619) 327-1571

Product

bird Mark 14 Respirator

Date Evaluated

August 1975

Summary

The bird Mark 14 Respirator is an extended range, leak compensating, positive phase respirator. It provides airway pressure up to 70 mmHg and flow rates up to 200 liters per minute. It is acceptable for use onboard aeromedical evacuation aircraft by similarity. It is equivalent to the bird Mark 10, except that it has higher airway pressure and flow rate capabilities.

Note

Replacement parts are available from the manufacturer:

Medical Products Division/3M
P.O. Box 2007
3101 E. Alejo Rd.
Palm Springs, CA 92262

Telephone: (619) 327-1571

Product

URGENCY bird Reduced For Neonates

Date Evaluated

November 1977

Summary

The URGENCY bird Reduced For Neonates is acceptable for aeromedical evacuation use. It is a time cycled, pneumatically driven unit that requires both an oxygen and compressed air power source.

Note

Replacement parts are available from the manufacturer:

Medical Products Division/3M
P.O. Box 2007
3101 E. Alejo Rd.
Palm Springs, CA 92262

Telephone: (619) 327-1571

Product

Travenol Heart-Lung Resuscitator, Model HLR 50-90

Date Evaluated

1968

Summary

Care must be taken to assure proper placement.

Note

No replacement parts available.

Product

Samson Neonatal Resuscitator

Date Evaluated

November 1975

Summary

The Samson Neonatal Resuscitator is a disposable unit. Oxygen concentrations of over 90% are consistently delivered by the resuscitator when supplemental oxygen of 6 liters per minute or greater is fed into the unit.

Note

No replacement parts available.

Product

Automatic Thermotic Aspirator Vacuum Pump, Model 763 N

Date Evaluated

October 1974

Summary

The Automatic Thermotic Aspirator Vacuum Pump, modified to include a two-way pressure equalizing valve, is acceptable for use onboard aeromedical evacuation aircraft. Though the pump exceeds radiated and conducted emission limits of MIL-STD-461A, ASD, Wright Patterson AFB, Ohio, has granted a waiver for this deficiency. The leakage current measured exceeded the 10 microamperes specified by the Association for the Advancement of Medical Instrumentation (AAMI) Subcommittee on Electrical Safety. The pump, therefore, should not be used on or near an electrically susceptible patient (one with probes, catheters, or other nonconductive paths from outside the body into the thorax).

Note

1. ENAMA, Wright-Patterson AFB, Ohio, has granted EMC waiver for this deficiency.
2. No replacement parts available.

Product

Gomco Aspirator Portable Pump, Model 789

Date Evaluated

October 1974

Summary

The unit was tested for suitability for use onboard aeromedical evacuation aircraft. The pump consists of a 24 VDC motor, rotary compressor pump, safety overflow valve, vacuum gauge, vacuum regulating valve, and fluid container. The unit passed all environmental tests though it exceeds EMI.

Note

1. ASD, Wright-Patterson AFB, Ohio has granted a waiver for this unit.
2. Replacement parts are available from the manufacturer:

GOMCO Surgical Manufacturing Corp.
828 E. Ferry St.
Buffalo, NY 14211

Telephone: (716) 894-6678

AD-A172 286

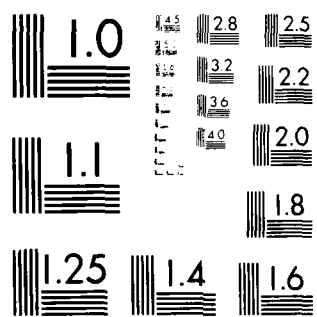
STATUS REPORT ON MEDICAL MATERIEL ITEMS TESTED AND
EVALUATED FOR USE IN U.S. SCHOOL OF AEROSPACE
MEDICINE BROOKS AFB TX P A LAND ET AL. JUN 86
USAF/CAN-TR-86-10

2/2

UNCLASSIFIED

P/G 6/12

ML



Product

Medical Multipurpose Suction Pump (Sundstrand) Model 77-500

Date Evaluated

April 1975

Summary

The unit did pass all environmental tests including vibration and rapid decompression. In accordance with paragraph 4.23, Association for the Advancement of Medical Instrumentation (AAMI), Safe Current Limits Standard (April 1974), the Sundstrand vacuum pump is classified as equipment "likely to contact the patient." Table 4.3.1 of the standard indicates leakage current limits from chassis to ground shall not exceed 100 microamperes when the third wire (ground) of the 115 volts alternating current (VAC) power cable is open. The Sundstrand vacuum pump does not exceed the leakage current limits when the pump is operating from direct current power or from 115 VAC/60 Hz power. However, when the unit is operating from 115 VAC/400 Hz power and the third wire (ground) of the power cable is open, leakage current from chassis to ground exceeds the limits specified by the AAMI standard.

Note

No replacement parts are available.

Product

Mueller Aspirator Pump (Carmody)

Date Evaluated

September 1972

Summary

The Mueller Aspirator Pump (Carmody) was tested for EMI only and was found to exceed radiated and conducted emission limits specified by MIL-STD-461A. It is for interim use only and should not be used if an acceptable aspirator is available. A waiver was granted for the use of the unit on the aircraft.

Power requirements: The pump operates from a 24-28 VDC power source.

Note

No replacement parts available.

Product

Laerdal Suction Unit, Transformer/Rectifier

Date Evaluated

December 1981

Summary

The Laerdal Suction Unit (LSU) is a versatile portable emergency aspirator which is effective for a wide range of medical applications. It features a high-vacuum, and high free air flow, and is well suited for oropharyngeal suction.* The LSU is typically used wherever central suction is not available. It can be used effectively in the field and/or ground transportation environments.

The main components of the LSU are the power pack with controls, motor, pump, vacuum bottle and suction tubing.

Based on the results of the tests conducted, the Laerdal Suction Unit with the EMI modified motor and the Transformer/Rectifier can be considered acceptable for use onboard aircraft used for aeromedical evacuation.

* This unit only operates in a relatively high (594 mmHg) suction mode which is ideal for oronasopharynx suctioning. A lower and more closely controlled suction mode such as 150 mmHg (ECRI Journal Mar 1978 for atraumatic tracheal suctioning is available with the installation of a Wika Variable control regulator 793000).

This unit has auxiliary bottles to augment the 480 ml bottle; however, to maintain adequate suction time, we do not recommend using suction containers which accumulate greater than 1300 cm³.

Power Requirements: Internal batteries or external 12 VDC.

Rectifier/Transformer: 115 VAC/50-400 Hz. Battery can be charged on 400 Hz power; however, we do not recommend operation from 400 Hz.

Note

1. The Mascot 24/12 VDC Converter, type 7413, emits excessive EMI and therefore cannot be considered acceptable for use onboard aircraft.

2. Replacement parts available from the manufacturer:

Laerdal Medical Corporation
One Labriola Court
Armonk, NY 10504

Telephone: 1-800-431-10555

Product

IVAC Digital Electronic Thermometer with EMI Suppression Case, Model 810

Date Evaluated

July 1973

Summary

The IVAC Electronic Thermometer is a lightweight, completely portable unit powered by a rechargeable battery. The thermometer did not pass EMI; however, with the thermometer in the aluminum case, the thermometers were approved for aeromedical evacuation.

Note

No replacement parts available.

Product

Ohio Transport Incubator (Modified for Aeromedical Evacuation)

Date Evaluated

June 1975

Summary

The Ohio Transport Incubator is an intensive care isolation incubator designed for intra-hospital, ambulance and aircraft transportation. The unit must be modified for EMI, and the Battery Pak modified to have a full charge light indicator. When the full charge light illuminates, the battery is on trickle charge.

Power Requirements: The Ohio Transport Incubator operates from 110 VAC/60-400 Hz, 12 VDC, 24 VDC, and external Nickel Cadmium Battery Pak.

Note

Replacement parts available from the manufacturer:

OHMEDA
P.O. Box 7550
Madison, WI 53707

Telephone: (608) 221-1551

Product

Narco Air-Shields Mobile Transport Incubator, Model TI67-1

Date Evaluated

July 1981; June 1984

Summary

The Narco Air-Shields Transport Incubator is intended for the transport of high-risk premature, low birth-weight, or critically ill newborns. It provides a controlled air temperature from 27°C (81°F) to 38°C (100°F), control of oxygen concentrations up to 85% at a 10 liters per minute flow rate, and a raised relative humidity. A greater than 60% relative humidity can be maintained within the hood for a minimum of 12 hours when the humidity sponge is soaked with 16 oz of water. Effective thermal isolation of the infant from the environment is provided by a double walled hood which also permits full visibility. Front and head access is provided with arm ports and doors; the mattress tray slides out of the head end approximately 25 cm (10 inches) for additional access. Also included is an observation lamp.

Based on the results of the tests conducted, the Narco Air-Shields Mobile Transport Incubator Model TI67-1 can be considered acceptable for use onboard aircraft and helicopters used for aeromedical evacuation. It should be noted that extremely high storage temperatures could render the hood thermometer nonfunctional.

Power Requirements: 110 VAC/50-400 Hz, 28 VDC or battery power (1 hour)

Note

1. The unit must be modified for EMI.
2. The TI67-1 should not be operated on line power (110 VAC/50-400 Hz) onboard aeromedical evacuation aircraft.
3. Replacement parts are available from the manufacturer:

Narco Air-Shields
505 Masons Mill Business Center
Huntingdon Valley, PA 19006

Telephone: (215) 657-6060

Product

Novamatrix TcO₂mette Portable TcPO₂ Monitor, Model 809

Date Evaluated

September 1981

Summary

The Novamatrix Transcutaneous Oxygen Monitor (TcO₂mette) is a portable noninvasive transcutaneous oxygen monitor. The TcO₂mette provides a continuous measurement of transcutaneous oxygen tension (TcPO₂) and local perfusion. The oxygen electrode temperature can be dialed in and displayed on the display panel as long as the temperature display pushbutton is depressed. High and low alerts are provided for both the TcPO₂ value and the oxygen electrode temperature.

Based on the results of the tests conducted, the Novamatrix TcO₂mette 809 Portable Transcutaneous Oxygen Monitor can be considered acceptable for use in aircraft used for aeromedical evacuation provided the following modifications are performed on any device for this purpose:

- a. Resistor R-78 (1K megohm) onboard 2030 is "cushioned" with some type of silicone compound.
- b. The shield assembly for above resistor, is soldered to the PC board at all four corners.

Power Requirements: 110 VAC/60 Hz (400 Hz not tested) or battery.

Note

Replacement parts available from the manufacturer:

Novamatrix Medical Systems, Inc.
1 Barnes Industrial Park Rd
P.O. Box 690
Wallingford, CT 06492

Telephone: (203) 265-7701

Product

BioMarine Oxygen Monitor/Controller, Model 400

Date Evaluated

September 1972

Summary

The BioMarine OMC 400 continuously analyzes, monitors, and controls the oxygen level in incubator, head hood, or tent. The prescribed oxygen level is dialed in, and an audio/visual alarm activates if the oxygen level deviation is 15% or more. This will occur if there is incubator or oxygen supply failure. The unit is easily connected to an oxygen cylinder or piped oxygen outlet. The unit should measure partial pressure of oxygen, not percentage.

Note

Replacement parts are available from the manufacturer:

Rexnord-Electronic Products Division
45 Great Valley Parkway
Malvern, PA 19355

Telephone: (215) 647-7200

Product

Gorman-Rupp Patient Thermoregulator, Model RK 250

Date Evaluated

November 1974-March 1975

Summary

The Gorman-Rupp Patient Thermoregulator did not meet radiated and conducted electromagnetic emission requirements of MIL-STD-461A; however, an indefinite waiver of this requirement has been granted by ENAMA, Wright-Patterson AFB, Ohio. The Thermoregulator meets the risk current requirements specified in AFR-160 for Type B equipment. Subject to the above conditions, the device is suitable for use on aeromedical evacuation missions.

Power Requirements: The unit operates from 115 VAC/60 Hz power only.

Note

No replacement parts available.

Product

DePuy Cast-0-Vac Cast Cutter, Model 1049

Date Evaluated

April 1972

Summary

In order to qualify the DePuy cast cutter for use on USAF aeromedical evacuation flights, attempts were made to shield and filter the unit to reduce the radiated and conducted emissions. At the same time, EMI filtering was limited in order that leakage current would not exceed 500 microamperes as specified by para 4.8.1 of the Association for the Advancement of Medical Instrumentation (AAMI) Safety Standards. The unit may be used, with waiver, onboard aeromedical evacuation aircraft.

Power Requirements: It can only be operated from 110 VAC/60 Hz power.

Note

No replacement parts available.

Product

Dextrometer Reflectance Colorimeter

Date Evaluated

July 1981

Summary

The Dextrometer Reflectance Colorimeter measures the degree of color developed on a Dextrostix Reagent Strip by the glucose contained in a drop of whole blood. The amount of light reflected from the reacted reagent area of Dextrostix is measured electronically, and a direct readout of the blood glucose value is displayed on the Digital Display. The Dextrometer Reflectance Colorimeter is approved for aeromedical evacuation aircraft and helicopters.

Power Requirements. 110 VAC/50-60 Hz (not tested 400 Hz) or battery.

Note


Replacement parts available from the manufacturer:

Ames Division, Miles Laboratories
P.O. Box 70
Elkhart, IN 46515

Telephone: (219) 264-8645

SECTION III

MEDICAL EQUIPMENT ITEMS THAT ARE ACCEPTABLE FOR USE ONBOARD AEROMEDICAL
EVACUATION AIRCRAFT; PROCURED VIA LOCAL FABRICATION OR CONTRACT.

PREVIOUS PAGE
IS BLANK 

Product

Portable Therapeutic LOX System (5L)

Date Evaluated

June 1973

Summary

The SAM Portable Therapeutic LOX System has been standardized and placed in use for worldwide aeromedical airlift on multi-mission aircraft not having an integral therapeutic oxygen system.

Procurement

Contract



Product

C-141 Therapeutic Oxygen Manifold Distribution System (TOMS)

Date Evaluated

September 1972-July 1974

Summary

Based on DT&E and OT&E reports, the C-141 Therapeutic Oxygen Manifold System meets the requirement for a plug-in oxygen distribution system to be used onboard C-141 aircraft on aeromedical evacuation missions. The system insures an adequate, safe, and controlled method for supplying oxygen to litter patients whose medical condition warrants the need for supplemental oxygen. The system is compatible with the C-141 aircraft and litter-securing system. It conforms to the appropriate military specifications and standards to insure patient protection with the airborne environment during both normal flight and emergency landing/ditching conditions. The manifold outlets are positioned so as not to hinder litter placement in the upper space.

Procurement

Contract

Note

The unit was not designed for ventilator operation.

Product

Mistogen Electronic Nebulizer, Model EN153A

Date Evaluated

August 1973

Summary

The Mistogen Electronic Nebulizer is a portable, 9.5-kg (21 lb) device that utilizes radiofrequency energy to excite an ultrasonic transducer crystal, that in turn produces cavitation in a column of liquid. The result is a very finely divided, cool mist that can be delivered in controllable quantities. The nebulizer components (electronics, blower, transducer, and fluid reservoir) are contained within an aluminum case. The case is 25.4 cm (10 inches) deep, 27.9 cm (11 inches) high, and 27.9 cm (11 inches) wide. A snap latch cover is removed from one side for operation. The transducer and half gallon polypropylene fluid reservoir are mounted on a movable base to facilitate preparation for operation and cleaning.

Power Requirements: The unit operates from 110 VAC/50-400 Hz electrical circuits.

Procurement

Contract

Product

Mistogen Electronic Nebulizer, Model XEN 153

Date Evaluated

July 1970

Summary

In response to a MAC request, the USAF School of Aerospace Medicine procured test quantities of the Mistogen Electronic Nebulizer, Model 153. This ultrasonic device is designed to deliver controllable amounts of liquid aerosol to patients via an open mask, face tent or tracheostomy mask. The nebulizer is secured to a mount which permits easy attachment to the standard NATO litter poles.

Following operational test and evaluation (OT&E), MAC personnel recommended "standardization of the Mistogen Electronic Nebulizer, Model XEN 153." It is capable of supplying the necessary supplemental humidification required by the vast majority of patients airlifted.

Power Requirements: The unit can be operated from an ambient air or oxygen power source.

Procurement

Contract

Product

SAM Multipurpose Vacuum Pump

Date Evaluated

March 1975

Summary

The unit passed all environmental tests including vibration, rapid decompression and electromagnetic compatibility (EMC). In accordance with AFR 160-3, Atch 3, the SAM vacuum pump is classified as equipment "likely to contact the patient." Leakage current limits from chassis to ground shall not exceed 100 microamperes when the third wire (ground) of the power cable is open. The SAM pump does not exceed the leakage current limits specified by AFR 160-3, Atch 3, when the unit is operating from 115 VAC, 60 Hz power with the third wire (ground) of the power cable open.

Power Requirements: 115 VAC/60-400 Hz, 28 VDC or battery.

Procurement

Contract

Note

When the unit is operating from 115 VAC/400 Hz power and the third wire (ground) of the power cable is open, leakage current from chassis to ground exceeds the limits specified. In this mode, unit should not be operated near an electrically susceptible patient.

Product

Portable Tracheal Aspirator (Prototype)

Date Evaluated

January 1979

Summary

The Portable Tracheal Aspirator passed all environmental tests, including vibration, rapid decompression and electromagnetic compatibility (EMC). The unit is capable of producing adjusted vacuum levels up to 500 mmHg and flow rates of 25 liters per minute. Access to operating controls, the collection bottle, and patient suction tube is provided by a top opening, removable hinged cover.

Power Requirements: For field use, an internal battery is provided that makes the unit fully operable without external power. The unit will also operate from 28 VDC. An external battery charger module is provided to recharge the battery from 117 VAC. The battery can also be recharged while plugged into 28 VDC.

Procurement

Contract

Product

Modified Stokes Litter

Date Evaluated

April-September 1975

Summary

The structural integrity of two modified Stokes Litters was evaluated by comparison to the original unmodified litter. The modifications included:

1. Incorporation of the quick release pin (MS 17990). The litter was found to have a 57% improvement in landing stress.
2. Incorporation of tube fittings was found to be equal to or better than the unmodified litter.

Procurement

Contract

Product

Litter Access Device

Date Evaluated

June 1973

Summary

The Litter Access Device is a logistically and operationally acceptable device which enables aeromedical personnel to have safe access to patients in upper litter spaces and permits able litter patients to ascend and descend safely from upper litters.

Procurement

Contract. Engineering drawings for the C-141 Litter Access Device are on file at the Engineering Data Center, 2750 ABW/EDOR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 731817 - Assembly of Litter Access Device

Product

Litter Enplaning-Deplaning Device (LEDD)

Date Evaluated

July-October 1974

Summary

The Litter Enplaning-Deplaning Device (LEDD) for aeromedical airlift aircraft met the design requirements and is acceptable for use on C-141 and C-130 aircraft.

Procurement

Local Fabricaton.

A list of parts is contained in Report SAM-TR-75-1, LITTER ENPLANING-DEPLANING DEVICE (January 1975). This technical report can be obtained by writing or telephoning:

US Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield VA 22161
Telephone: (703) 487-4650

Product

Litter Equipment Support Device

Date Evaluated

February 1975

Summary

The device has proven, during feasibility testing, to be a versatile aid to securing most of the medical equipment items presently secured on an empty patient litter, e.g., incubator, battery pack, patient monitor, defibrillator, etc.

Procurement

Local Fabrication

Engineering drawings for the Litter Equipment Support Device are on file at USAFSAM/VNC, Brooks AFB, TX 78235-5301. The drawing number and nomenclature are as follows:

No. SAM 7503 - Assembly & Details Equipment Support Device, Litter

Product

Litter Mounted Examination Lamp

Date Evaluated

March 1973

Summary

The Litter Mounted Examination Lamp was tested in operational aeromedical evacuation aircraft and found to be entirely satisfactory for patient care during transport.

Power Requirements: Battery operated.

Procurement

Local Fabrication

Engineering drawings for the Litter Mounted Examination Lamp are on file at the Engineering Data Center, 2750 ABW/EDDR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 721100 - Assembly of Lamp, Examination - Litter Mounted

Product

Litter Linen Lift

Date Evaluated

July 1973

Summary

The redesigned Litter Linen Lift meets the performance specifications and fulfills the development objective.

Procurement

Contract. Engineering drawings for the Litter Linen Lift are on file at the Engineering Data Center, 2750 ABW/EDDR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 731813 - Linen Lift Assembly

Product

Litter/Stryker Frame Respirator Mount

Oxygen Pack for Size "D" or "E" Tanks

Date Evaluated

December 1975

Summary

The Litter/Stryker Frame Respirator Mount was designed as a lightweight device to be used on a Stryker Frame or on a standard NATO litter to support and restrain the bird MARK 10-14 Respirator during aeromedical airlift. The bird respirator is the most frequently used instrument to provide respiratory support to patients requiring this service during aeromedical airlift. A high pressure (1800 psi), modified oxygen pack is also provided as a complimentary part of the respirator mount.

The Oxygen Pack consists of an oxygen tank carrier with pressure cylinder attachments for size "D" or "E" tanks with a pressure regulation gauge, an oxygen connecting line, a carrying handle, and an oxygen cylinder wrench.

Procurement

Drawings are available through USAFSAM/VNC, Brooks AFB, TX 78235-5301.

Note

Modification to mount accomplished in 1978.

Product

Multipurpose Aeromedical Tray Holder

Date Evaluated

June 1973

Summary

The Multipurpose Aeromedical Tray Holder meets the design and performance specifications and fulfills the development objective.

Procurement

Local Fabrication

Engineering drawings for the Multipurpose Aeromedical Tray Holder are on file at the Engineering Data Center, 2750 ABW/EDDR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 7150201 - Multipurpose Aeromedical Tray Holder General Assembly.

Product

RF Nurse Call System - MEDICALL

Date Evaluated

July 1973

Summary

The MEDICALL, or inflight radiofrequency call system, was designed and fabricated for use in worldwide aeromedical airlift operations on multi-mission aircraft. No equipment in the present inventory fulfills this requirement.

The system met the stated objectives, enabled aeromedical crewmembers to assist litter patients more efficiently, and was enthusiastically endorsed by them during operational test and evaluation.

Procurement

Contract.

Product

Modesty Curtain, Disposable

Date Evaluated

July 1973

Summary

The improved (second prototype) disposable modesty curtain is suitable for use onboard C-141 and C-130 aircraft. Tie fasteners are available.

Procurement

Contract.

Product

Pediatric Safety Net

Date Evaluated

February 1975-August 1976

Summary

The safety net is an added safety feature and does not remove the requirement for the child to be secured to the litter with two litter straps.

Procurement

Contract

Product

Septisol Foam (4.6 oz) Dispenser Mount

Date Evaluated

June 1973

Summary

According to MAC, TAC, PACAF, and USAFE OT&E reports, the redesigned dispenser mount meets design and performance specifications and fulfills the development objective. The Septisol Foam is an acceptable hand disinfectant. It is not satisfactory as a cleanser to remove dirt.

A reprourement package was developed to enable major commands to procure operational quantities of the dispenser mount.

The prototype dispenser mounts were permanently transferred to the aeromedical squadrons for operational use.

Procurement

Local Fabrication. Engineering drawings for the improved hand disinfection device are on file at the Engineering Data Center, 2750 ABW/EDDR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 73100 - Mount, Dispenser, Hand Disinfectant, Aerosol Foam

Note

The Septisol Foam is commercially available from:

Vestal Laboratories
Division of Chemed Corporation
4963 Manchester Ave.
St Louis, MO 63110

Telephone: (314) 535-1810

Product

Frequency Converter - 400/60 Hz, Model PS-75-426-1

Date Evaluated

December 1975

Summary

A portable 400/60 Hz Frequency Converter was developed for use in the C-141 aeromedical evacuation aircraft and may be used in the C-130 configured for aeromedical evacuation. The unit provides frequency changes from 400 Hz three-phase to 60 Hz single-phase power.

Procurement

Contract

Product

Vickers Aircraft Transit Isolator

Date Evaluated

September 1979

Summary

The Vickers Aircraft Transit Isolator is a self-contained Transit Isolator designed for the isolation of patients requiring transportation in aircraft where the need to maintain a strict microbiological security is required.

The isolator consists of a welded lower frame and attached baseboard which supports the air supply unit, filters, and the battery box. An upper demountable framework, complete with a human entry port and a supply entry port, is provided. An envelope fitted with "half suits," glove sleeves, IV sleeves, and a reinforced floor to accommodate the stretcher is supplied complete with fixing points for belt attachment to the lower framework and patient restraining straps.

Based on the results of the tests conducted, the Vickers Aircraft Transit Isolator can be considered acceptable for use on C-130 and C-141 aircraft used for aeromedical evacuation provided the following conditions are met: (a) The liquid, lead-acid batteries be removed and replaced with Gel cell type batteries. (b) All electrical connections be reworked to assure reliability. (c) Capacitors be installed (as noted in paragraph 4.2 a (1) of the final test and evaluation report *) to reduce radiated emissions. (d) Oxygen therapy be limited to 6 liters per minute. (e) A specially trained isolation team be utilized for all patient transfers.

Procurement

Contract

* September 1979 Test and Evaluation Report on the Vickers Aircraft Transit Isolator.

Product

Inflight Intravenous Bottle Holder
FSN: 6530-00-237-6589

Date Evaluated

December 1972

Summary

The Inflight Intravenous Bottle Holder was found to be a practical, safe, and rapid method of securing intravenous solutions during aeromedical evacuation.

Procurement

Local Fabrication. Drawings are on file at the Engineering Center, 2750 ABW/EDDR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 721220 - Bottle Holder Assembly

Product

Clinical Records Rack

Date Evaluated

August 1974

Summary

The Clinical Records Rack was designed to provide a portable, durable, lightweight, compartmentalized unit that will enhance handling, organization, and storing of patient records during aeromedical evacuation.

Procurement

Local Fabrication. A list of parts is contained in Report SAM-TR-74-62, CLINICAL-RECORDS RACK FOR TACTICAL AEROMEDICAL AIRLIFT (November 1974). This technical report can be obtained by writing or telephoning:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

Product

Medical Treatment Chest

Date Evaluated

September 1972-July 1974

Summary

The Medical Treatment Chest for Tactical Aeromedical Airlift aircraft met the design requirements and is acceptable for use on C-130 aircraft.

Procurement

Local Fabrication. A list of parts is contained in Report SAM-TR-74-61
MEDICAL-TREATMENT CHEST FOR TACTICAL AEROMEDICAL AIRLIFT (November 1974).
This technical report can be obtained by writing or telephoning:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

Product

Transportable Airborne Therapeutic Station (TATS)

Date Evaluated

August 1973

Summary

The Transportable Airborne Therapeutic Station (TATS) was designed to meet an urgent operational requirement for a carrier-container to facilitate the transport, orderly stowage, and convenient access to medical equipment, supplies and records during patient transport on multipurpose C-141 aircraft. The TATS consists of two specially designed compartmentalized structures that roll on casters and have mechanisms for securing them into the C-141 seat track at the medical crew station location. The TATS contains, and makes readily available, the medical and patient support equipment and supplies required for patient support during the airlift portion of aeromedical evacuation missions. The two units are designated the Medical Crew Director (MCD) substation, and the Medical (MED) substation. The MCD substation provides for the stowage of large items such as medical records, oversized X-ray envelopes, respirators, suction pumps, oxygen bottles, sheets, covers, etc. The MED substation provides special compartments for the stowage of medications, syringes, dressings, patient monitoring devices, surgical equipment, etc. Each substation occupies the space of three seats and, for operational use, is positioned directly in front of the seats assigned to the medical crew. An in-house development was initiated at the USAF School of Aerospace Medicine and prototype TATS sets were designed and fabricated. Evaluations indicated the TATS fulfilled the requirement for operational use.

Procurement

Contract. Engineering drawings for the Transportable Airborne Therapeutic Station (TATS) are on file at the Engineering Data Center, 2750 ABW/EDOR, Wright-Patterson AFB, Ohio. The drawing number and nomenclature are as follows:

No. 7037674 - Transportable Airborne Therapeutic Station Assembly.

Note

Refurbishment and tie-down modification completed.

Product

SAM Infusion Pump Bubble Detector with Holter Infusion Pump

Date Evaluated

May 1975

Summary

The unit passed all environmental tests including vibration, rapid decompression, and electromagnetic compatibility tests. In accordance with paragraph 4.2.3, Association for the Advancement of Medical Instrumentation (AAMI), Safe Current Limits Standard (April 1974), the SAM Bubble Detector with the Holter Infusion Pump is classified as equipment "likely to contact the patient." Table 4.3.1 of the standard indicates leakage current limits from chassis to ground shall not exceed 100 microamperes when the third wire (ground) of the power cable is open. The SAM Bubble Detector and Holter Model 911 Infusion Pump do not exceed the leakage current limits specified by the AAMI Standard when the units are operating from internal battery or when operating from 115 VAC 60-400 Hz power with the third wire (ground) of the power cable open.

Procurement

Contract.

SECTION IV

MEDICAL EQUIPMENT ITEMS NOT ACCEPTABLE FOR USE ONBOARD AEROMEDICAL
EVACUATION AIRCRAFT.



Cardioscopes/Defibrillators/Recorders

- a. Datascope Cardiotron, Model 650, with Model G Power Module
Unreliable under conditions of aeromedical evacuation. Low quality workmanship and construction.
- b. Datascope M/D 2J Monitor/Defibrillator/Synchronizer
Unreliable under conditions of aeromedical evacuation. Scope adversely affected by altitude. Defibrillator adversely affected by vibration.
- c. Tektronix 413 Neonatal Monitor with 400 Series Recorder
Susceptible to high levels of radiated interference in 60 and 400 Hz fields. Affected by extreme environmental conditions and vibration.
- d. Mennen-Greatbatch Cardio Pak 936S Monitor/Defibrillator/Synchronizer/Recorder. Excessive EMI. Adversely affected by extremes in environmental conditions and vibration.
- e. Mennen-Greatbatch Neonatal Monitor, Model 744, with Recorder
Excessive EMI. Adversely affected by vibration and humidity.
- f. Fairfield DMS600 Cardio-Aid Defibrillator
Excessive EMI.
- g. SpaceLabs 413A Monitor/Digital Readout/Recorder (formerly the Vitatek 413A Neonatal Monitor) Adversely affected by vibration. Excessive EMI.
- h. Motorola Advanced Portable Duplex Coronary Observation Unit
Excessive EMI.
- i. Datascope M/D 3A Monitor/Defibrillator
Excessive EMI.
- j. Burdick DC 180M Monitor/Defibrillator with Serial Numbers 020004 and above. Reevaluated for 110 VAC/60-400 Hz power input. Unit was found to have excessive EMI on 60 and 400 Hz power due to an internal component change by the manufacturer.
- k. Hewlett-Packard Model 78670A Cardiac Monitor/Defibrillator
Excessive EMI.



Humidifiers

- a. Bennett Cascade Humidifier, Model 1900
Excessive EMI.
- b. bird Heater Nebulizer Tube
Excessive EMI.
- c. bird Immersion Heater
Possible fire hazard.
- d. Puritan-Bennett Nebulizer with Immersion Heater, Model 126055
PN 12900
Excessive EMI.

Infusion Systems

- a. DIAL-A-FLO Device
Adversely affected by changes in altitude and solution head pressure.
- b. Harvard Compact Infusion Pump, Model 975
Deficiency in syringe holders caused syringe walls to deform.
- c. IVAC 400 Automatic Self-Regulating IV Infusion Pump
Pumps air. Not configured for convenient transport, securing, handling, and withstanding vibration.
- d. IVAC 500 Automatic Self-Regulating IV Infusion Pump
Excessive EMI. Adversely affected by changes in cabin pressure.
- e. Sigmamotor TM-20-2 Infusion Pump
Excessive EMI.
- f. Sigmamotor VOLUMET Infusion Pump
Excessive EMI when operating from 115 VAC/60-400 Hz power.
- g. Travenol FLO-GUARD 6000 Volumetric Infusion Pump
Excessive EMI.

Blood Pressure Measurement Devices

- a. Filac Vital Signs Monitor, Model F-600
Erratic operational characteristics.
- b. Infrasonde Electronic Blood Pressure Monitor
Adversely affected by aircraft acoustical noise.
- c. Somatronix Digital Blood Pressure/Pulse Monitor, Model 307
Adversely affected by aircraft noise and vibration.
- d. Sphygmostat Electronic Blood Pressure Monitor, Model B-300
Erratic operational characteristics.
- e. Sphygmostat Electronic Blood Pressure Monitor, Model B-350
Adversely affected by aircraft acoustical noise.
- f. Sphygmostat Pulse Monitor, Model P-75
Electrical shock hazard in battery charging mode.

Rescue Litter Devices

Thompson Carrier

Does not possess aerodynamic or rotational stability when exposed to H-53 rotor wash.

Respiratory Monitors

- a. Stoelting's Infant Sentry Apnea Alarm, Model 1500 (Prior name: AEL)
Sensitive to aircraft vibration.
- b. Tektronix 413 Neonatal Monitor with 400 Series Recorder
Susceptible to high levels of radiated interference in 60 and 400 Hz
fields. Affected by extreme environmental conditions and vibration.
- c. SpaceLabs 413A Monitor/Digital Readout/Recorder (formerly the Vitatek 413A
Neonatal Monitor).
Excessive EMI. Adversely affected by vibration.

Suction Units

IMPACT Model 302 Portable Aspirator
Excessive EMI. Unacceptable plug. Electrical shock hazard.

Incubators

- a. Air-Shields (Isolette) Transport Incubator, Model TI-58
Possible fire hazard. Bassinette flammable. Audible alarm has excessive EMI.
- b. Armstrong CARE-ETTE Isolation Incubator, Model 190A
Requires battery pack, securing devices for infant and incubator, vented mattress.
- c. Mistogen Transport Incubator, Model TI-700
Excessive EMI. Unacceptable battery pack. CO₂ buildup.
- d. Sierracin Cradle Warmer
Excessive EMI. Lack of securing devices.
- e. Vickers Transport Incubator, Model 77
Excessive EMI. Unacceptable battery pack (Liquid Lead Acid).
- f. Healthdyne Infant Transport System
Excessive EMI.

Ventilators

- a. Bennett MA-1 Ventilator
Excessive EMI. Failed during rapid decompression test.
- b. Bird Ventilator Unit, 28 VDC and 110 VAC/60 Hz Compressors, Battery Pack and Charger (Prototypes)
Excessive EMI - 28 VDC and 110 VAC/60 Hz Compressors. IMV bird Respirator tidal volume sensitive to pressure change.
- c. Bourns BP 200 Infant Pressure Ventilator
Excessive EMI. Airway pressure fluctuations during varying temperatures. Excessive peak airway pressure during rapid decompression.
- d. Monaghan Volume Ventilator, Model 225
Fluidic components are adversely affected by changes in ambient pressure.
- e. Searle VVA Adult Volume Ventilator
Excessive EMI - spirometer and humidifier. Equipment malfunctioned at temperature of 40°F (4°C), RH 95%.
- f. Siemens-Elema 900B Servo Ventilator
Excessive EMI. Significant sensitivity to high humidity and varying temperatures. Excessive peak airway pressure during rapid decompression.

Battery Packs

Ohio Gel Cell 12V Battery Pak
Excessive EMI.

Miscellaneous

- a. Oximetrix Shaw Catheter Oximeter
Excessive EMI.
- b. Accumed TM-IV Semi-Rigid Bottle
Failed Altitude Testing.

SECTION V

MEDICAL SUPPLY ITEMS ACCEPTABLE FOR USE ONBOARD AEROMEDICAL
EVACUATION AIRCRAFT.

PREVIOUS PAGE
IS BLANK



Product and Manufacturer

Kamen-Wilkinson Foam Cuff and Endotracheal Tube

Airlife Inc.
1015 Grandview
Glendale, CA 91209

Telephone: (714) 981-08r .

Date Evaluated

September-December 1973

Summary

The Kamen-Wilkinson foam cuffs were relatively unaffected by changes in ambient pressure except for the drop in pressure lasting 2-3 minutes following descent. This decline in cuff/tracheal pressure may become critical since it could lead to aspiration. Thus, selecting the proper tube size is important when using the Kamen-Wilkinson foam cuff.

Procurement

Manufacturer



Product and Manufacturer

Bird Free Flow Humidification Kit

Medical Products Division/3M

P.O. Box 2007

3101 E. Alejo Rd.

Palm Springs, CA 92262

Telephone: (619) 327-1571

Date Evaluated

1971-1972

Summary

The Bird Free Flow Humidification Kit provides for direct humidification of all metered free flow gases. It is a universal, long-term, multifunction humidifier-nebulizer.

Procurement

Manufacturer. Request Item 2141.

Product and Manufacturer

Bard-Parker Nebulizer Heater Jacket

Seamless-Dart Respiratory
P.O. Box 828
Wallingford, CT 06492

Date Evaluated

October 1978; January 1980

Summary

The Bard-Parker Nebulizer Heater Jacket, operated on 115 VAC/60 Hz power, did not exceed conducted or radiated emissions limits as specified in MIL-STD-461A.

The unit was operated on 115 VAC/60 Hz, and connected to a flow meter set at 5 LPM, the mist temperature exiting a 36-inch (91.4 cm) corrugated tubing stabilized at 89°F (31.7°C). The flow rate was increased to 10 LPM and the temperature stabilized at 86.4°F (30.2°C). With the unit operating on 115 VAC/400 Hz, and the flow meter set at 10 LPM, it stabilized at 88.8°F (31.6°C). Based on these results, the unit is acceptable for use onboard aeromedical evacuation aircraft.

Power Requirement: 115 VAC/60-400 Hz.

Procurement

Manufacturer

Product and Manufacturer

Tempa-Dot Single Use Oral Thermometer

Info-Chem Inc.
75 Passaic Ave.
Fairfield, NJ 07006

Telephone: (201) 575-9507
1-800-631-3409

Date Evaluated

September-October 1976

The Tempa-Dot Single Use Oral Thermometer provides an accurate, reliable, safe method for routine clinical temperature monitoring. It can be obtained in either a Centigrade or Fahrenheit version. The thermometers are individually packaged and sterilized. If the thermometers are stored in a temperature above 86°F (30°C), the minimum time required for the registering of the patient's temperature under normal conditions is 30 seconds. If the thermometers are stored in a temperature below 59°F (15°C), the minimum time required for the registering of the patient's temperature will increase to approximately 60 seconds. If the thermometers are stored in a 120°F (49°C) temperature environment for a period of 2 to 6 hours, placement in normal conditions for at least 20 minutes is required prior to use.

Procurement

Manufacturer

Product and Manufacturer

Takeda Medical Digital Thermometer, Model UF-10

Takeda Medical Inc.
17945-G Skypark Circle
Irvine, CA 92714

(714) 630-1779

Date Evaluated

March 1987

Summary

The Takeda Medical Digital Thermometer, Model UF-10 is a small, lightweight thermometer designed for oral and axillary use. A liquid crystal display indicates body temperature in degrees Fahrenheit ($^{\circ}\text{F}$), with a range of 89.6° to 107.6°F (32° to 42°C). To conserve battery life, an automatic power off feature turns the thermometer off approximately 12 minutes after the unit is turned off. The thermometer is supplied with a plastic storage container and disposable probe covers.

Power Requirements

DC, internal Type LR44 alkaline manganese dioxide battery

Procurement

Manufacturer

Note

Users should closely supervise all patients utilizing this device to prevent the thermometer's sensor or sensor stem from being bent, bitten, or dropped, and to prevent the internal battery from being accidentally ingested.

Product and Manufacturer

Nelkin/Piper Digital Thermometer, Model 268

Nelkin/Piper International
811 Wyandotte St.
P. O. Box 807
Kansas City, MO 64141

(816) 842-1711

Date Evaluated

March 1987

Summary

The Nelkin/Piper Digital Thermometer, Model 268 is a small, lightweight thermometer designed for oral and axillary use. A liquid crystal display indicates body temperature in degrees Fahrenheit ($^{\circ}\text{F}$), with a range of 89.6° to 107.7°F (32° to 42°C). The $^{\circ}\text{F}$ indicator in the display flashes until the unit is finished measuring temperature. To conserve battery life, an automatic power off feature turns the thermometer off approximately 8 minutes after the device is turned on. The thermometer is supplied with a plastic storage container and disposable probe covers.

Power Requirements

1.55 VDC, internal Type SR41 silver oxide battery

Procurement

Manufacturer

Note

Users should closely supervise all patients utilizing this device to prevent the thermometer's sensor or sensor stem from being bent, bitten, or dropped. The liquid crystal display on the Model 268 is significantly smaller than the display on the Model 270.

Product and Manufacturer

Nelkin/Piper Digital Thermometer, Model 270

Nelkin/Piper International
811 Wyandotte St.
P. O. Box 807
Kansas City, MO 64141

(816) 842-1711

Date Evaluated

March 1987

Summary

The Nelkin/Piper Digital Thermometer, Model 270 is a small, lightweight thermometer designed for oral, axillary, and rectal use. A liquid crystal display indicates body temperature in degrees Fahrenheit ($^{\circ}\text{F}$), with a range of 95.0° to 107.6°F (35° to 42°C). The $^{\circ}\text{F}$ indicator in the display flashes until the unit is finished measuring temperature. To conserve battery life, an automatic power off feature turns the thermometer off approximately 15 minutes after the unit is turned on. The thermometer is supplied with a plastic storage container and disposable probe covers.

Power Requirements

1.55 VDC, internal Type SR41 silver oxide battery

Procurement

Manufacturer

Note

Users should closely supervise all patients utilizing this device to prevent the thermometer's sensor or sensor stem from being bent, bitten, or dropped. The liquid crystal display on the Model 270 is significantly larger and easier to read than the display on the Model 268.

Product and Manufacturer

- (1) Dover Urinary Drainage Bag with Flo-Check Valve
- (2) Dover Urinary Drainage Bag with Urine Meter

Owens & Minor
4710 Industry Park
San Antonio, TX 78218

Telephone: (512) 661-2341

Date Evaluated

June 1979

Summary

a. The Dover Urinary Drainage Bag is a disposable urinary drainage bag with a sample port and a Flo-Check anti-reflux valve. It provides a closed system for the collection and measurement of urinary output. The anti-reflux valve is provided to prevent urine from returning to the bladder should the bag be placed on the same level as the bladder.

b. The Dover Drainage Bag with Urine Meter and sample port is a disposable urine collection bag with a preconnected urine meter and drainage tubing. It provides a closed system for the collection and measurement of urinary output. The integral urine meter provides the capability of measuring very small urine outputs from as little as 2 ml to 200 ml.

Based on the results of the tests conducted, both the Dover Drainage Bag with Flo-Check Valve and the Dover Drainage Bag with Urine Meter can be considered acceptable for use onboard aeromedical evacuation aircraft and Air Rescue Recovery Service helicopters.

Procurement

Manufacturer

Note

In the event of an extremely rapid decompression (1 sec or less), the momentary high positive pressure in the system might cause injury to the bladder.

Product and Manufacturer

Dynacor Closed Urinary Drainage System

Date Evaluated

June 1979

Summary

The Dynacor unit is a disposable urinary drainage bag. It provides a closed system for the collection and measurement of urinary output.

Based on the results of the tests conducted, the Dynacor Closed Urinary Drainage System can be considered acceptable for use onboard aeromedical evacuation aircraft and Air Rescue Recovery Service helicopters.

Procurement

FSN 6530-00-105-8649

Note

In the event of an extremely rapid decompression (1 sec or less), the momentary high positive pressure in the system might cause injury to the bladder.

Product and Manufacturer

- (1) Curity Monoflo Drainage Bag
- (2) Curity Urine Meter with Aspirating Port

Kendall Company
Hospital Products Division
1 Federal Street
Boston, MA 02110

Telephone: (617) 423-2000

Date Evaluated

June 1979

Summary

a. The Curity Monoflo Drainage Bag is a disposable urinary drainage bag. It provides a closed system for the collection and measurement of urinary output.

b. The Curity Urine Meter with Aspirating Port is a disposable urine collection bag with a preconnected urine meter and drainage tubing. It provides a closed system for the collection and measurement of urine output. The integral urine meter provides the capability of measuring very small urine outputs from as little as 4 ml.

Based on the results of the tests conducted, both the Curity Monoflo Drainage Bag and the Curity Drainage Bag with Urine Meter can be considered acceptable for use onboard aeromedical evacuation aircraft and Air Rescue Recovery Service helicopters.

Procurement

Manufacturer

Note

In the event of an extremely rapid decompression (1 sec or less), the momentary high positive pressure in the system might cause injury to the bladder.

Product and Manufacturer

Aero-West Aerosol Dispenser with "Dear John" Aerosol
Model 510H-15

Date Evaluated

June 1970

Summary

Based upon tests of a single unit, the Aero-West Model 510H-15 Aerosol Dispenser with "Dear John" Aerosol is acceptable for use on the C-141 in the latrine of the comfort pallet using the razor outlet. If the dispenser is used in other than the above application, modifications are required to make this unit acceptable. Those characteristics subject to objection include:

- (1) the unit does not have a 3-wire line cord and the chassis is not grounded;
- (2) the electrical system is not fused.

Procurement

Manufacturer

Product and Manufacturer

Disposable Ashtray

Container Corporation of America
P.O. Box 1007
925 Avenue H East
Arlington, TX 76111

Telephone: (817) 649-3341

Date Evaluated

July 1973

Summary

The Disposable Ashtray designed for use by litter patients meets the performance specifications and fulfills the development objective.

Procurement

Manufacturer

Product and Manufacturer

Disposable Oxygen Masks

Tomac Bagless, Adult Size, Tomac Catalog #19300-020

Seflo Universal, no catalog number given

Tomac with Rebreather Bag, Adult Size, Tomac Catalog #19304020

Date Evaluated

January 1968

Summary

Results indicate the mask with the rebreather bag to be superior to the other two tested.

Procurement

FSN 6515-00-888-6122

Product and Manufacturer

Heimlich Valve

Bard-Parker Laboratories
Division of Becton, Dickinson and Company
P.O. Box 300
Lincoln Park, NJ 07035

Telephone: (201) 628-9600

Date Evaluated:

June 1960

Summary

The Heimlich Valve is a method of transporting patients with chest tubes to allow egress of air from the chest without allowing ingress of air through the valve. This valve is perfectly safe for transport of aeromedical evacuation patients. It must be placed in line between the patient and the underwater sealed chest drainage unit.

Procurement

FSN 6515-00-926-9150

Product and Manufacturer

Litter Back-Rests

Date Evaluated

March 1970

Summary

Two Litter Back-Rests, FSN 6230-299-8353, one modified to allow folding and one unmodified, were tested to determine if they were safe for use by patients during take-off and landing in aeromedical evacuation aircraft. The tests indicated that both the modified and unmodified back-rests can withstand the forces applied to them by a 250-pound patient during aircraft acceleration for take-off and climb to altitude.

Procurement

FSN 6230-299-8353

Product and Manufacturer

Pleur-Evac Adult-Pediatric, Non-metered, Model A-4000
Pleur-Evac Adult-Pediatric, Metered, Model A-4010

Deknatel Div.
Howmedica, Inc.
110 Jericito Turnpike
Floral Park, NY 11001

Telephone: (516) 488-5400

Date Evaluated

October 1975

Summary

Test and evaluation of the two models (A-4000, A-4010) of the Pleur-Evac Underwater-Seal Drainage unit were conducted at the USAF School of Aerospace Medicine to determine their suitability for use onboard aeromedical evacuation aircraft. Both Pleur-Evac Units are acceptable only when Heimlich Valves are used concurrently (See Note). The units are not acceptable for use without Heimlich Valves.

Procurement

Manufacturer

Note

The Heimlich Valve is placed in line between the patient and the unit. The valve will protect the patient against pneumothorax if the air-evacuating unit becomes nonfunctional or the integrity of the system is lost.

Product and Manufacturer

Viaflex Plastic IV Containers

Travenol Laboratories, Inc.
2501 N. Great Southwest Parkway
Grand Prairie, TX 75050

Telephone: (214) 647-1433
1-800-492-9800

Date Evaluated

March 1973-October 1975

Summary

Inflight testing indicated that seed bubbles form sporadically in both the container and administration line. These bubbles tend to adhere to the walls of the container and line. Cause of formation was not determined. However, the system should be carefully observed inflight due to the sporadic formation of bubbles.

Procurement

Manufacturer

Note

An inline filter should be used to negate this problem during aeromedical evacuation missions.

Product and Manufacturer

Biosources International Model C-2000 and Model KR-700 Amplifying Stethoscopes

Biosources International Inc.
P.O. Box 3865
Napa, CA 94558

Telephone: (707) 944-0645

Date Evaluated

June 1985

Summary

The Model C-2000 and Model KR-700 amplifying stethoscopes function on mechanical and acoustical principles without moving parts, batteries, or wires. They deliver excellent audible signals of blood pressure, respiration, and heart beat, while effectively rejecting extraneous aircraft noise. The Model C-2000 utilizes a dual transmission tube while the Model KR-700 employs a single transmission tube. A transducer guard is included with the Model C-2000 to prevent accidental damage to the stethoscope head during storage.

Procurement

Manufacturer

Product and Manufacturer

CHAD Oxymizer, Oxygen Conserving Nasal Cannula

CHAD Therapeutics, Inc.
6324 Variel Avenue, Suite 323
Woodland Hills, CA 91367

Telephone: (818) 882-0883

Date Evaluated

December 1986

Summary

The CHAD Oxymizer, Oxygen Conserving Nasal Cannula, was compared with the currently used nasal cannula, NSN 6515-00-246-3782. During ground level and altitude evaluations, the CHAD Oxymizer required an average of 40% less oxygen flow to achieve a 98% oxygen saturation level on human subjects, compared to the currently used nasal cannula. The CHAD Oxymizer also withstood extreme hot and cold temperature storage and rapid decompression tests with no appreciable physical damage or performance degradation.

Power Requirements: Oxygen source (medical grade, 100%) with adjustable flowmeter and tapered output fitting for cannula attachment.

Procurement

Manufacturer

Note

Acceptability is contingent on the policies established by HQ MAC/SGROV and/or the 375th AAW/SGNL, Scott AFB IL, regarding its use in the aeromedical evacuation system. At the time of our evaluation, HQ MAC/SGROV does not recommend its use for at least two reasons. It is both more expensive, and it presents considerable potential for errors concerning a patient's oxygen prescription. If different nasal devices--which require very different flow rates to achieve the desired result--could be used or substituted within the aeromedical evacuation system, then different oxygen prescriptions would have to be established and could be accidentally mixed up.

Product and Manufacturer

Argyle Sentinel Seal Dual Chest Drainage Unit

Sherwood Medical
St Louis, MO 63103

Telephone:
(800) 527-1806
(800) 392-5859 - Missouri only

Date Evaluated

January 1989

Summary

The Argyle is used to remove air and fluid from the patient's pleural cavity; it consists of a collection, water seal, and suction control chamber. Fluid accumulates in the collection chamber while air from the patient's pleural cavity bubbles through the water seal and out of the unit. The water seal separates the patient's collection chamber from the ambient environment. During ascent air in the collection chamber expands and bubbles out of the unit through the water seal. During descent a set of check valves prevent cabin air from bubbling backwards through the water seal into the collection chamber.

Procurement

Manufacturer

Notes

1. As with all chest drainage systems used in Aeromedical Evacuation, this unit must be used with a Heimlich Valve to prevent cabin air from entering the patient's pleural cavity.
2. For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.
3. To ensure proper operation, readjust the water level in the water seal and suction control chamber as necessary, after each landing.
4. The Argyle has a check valve between the chambers so that water from the water seal chamber does not enter the collection chamber, and water in the patient assessment chamber does not enter the water seal chamber. This unit does not allow any cabin air to enter the collection chamber - but a large negative pressure (approximatedly 260 cm H₂O) may develop at the chest tube. The only way to alliviate the negative pressure is to vent the unit manually so that cabin air is allowed to enter the unit.

Product and Manufacturer

Migada Underwater Chest Drainage Unit

Migada, Inc.
150 E Olive Ave Suite 215
Burbank, CA 91502

Telephone:
(818) 848-3880

Date Evaluated

Jan 1989

Summary

The Migada was designed as an emergency treatment device for removing air and fluids from a patient's pleural cavity under field conditions. It consists of a two connected collection chambers with the water seal incorporated within the first. Air and fluids both drain through the water seal; fluids accumulates in the collection chamber while the air bubbles through the water seal and flows out of the unit. The water seal separates the patient from the ambient environment. During ascent air in the drainage tube expands and bubbles out of the unit through the water seal. During descent cabin air pushes the fluid within the collection chamber back up the drainage tube towards the patient; cabin air may also bubble into the drainage tube. Use of a Heimlich Valve protects the patient from the possible deleterious effects of dirty cabin air and increasing cabin air pressure.

Procurement

Manufacturer

Notes

1. As with all chest drainage systems used in Aeromedical Evacuation, this unit must be used with a Heimlich Valve.
2. For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.
3. The Migada does not have suction control capability - suction applied to the patient must be regulated at the suction source.
4. Because fluids from the collection chamber will travel up the drainage tube during descent - ensure that the Migada is located well below the patient to prevent complications from the fluid backing into the Heimlich Valve.

Product and Manufacturer

Pleura Gard Chest Drainage System

CONMED Corp
310 Broad St
Utica NY 13501

Telephone:
(800) 448-6506

Date Evaluated

Jan 1989

Summary

The Pleura Gard is used to remove air and fluid from the patient's pleural cavity; it consists of a collection, water seal, and suction control chamber. Fluid accumulates in the collection chamber while air from the patient's pleural cavity bubbles through the water seal and out of the unit. The water seal separates the patient's collection chamber from the ambient environment. During ascent air in the collection chamber expands and bubbles out of the unit through the water seal. During descent, cabin air bubbles backwards through the water seal into the collection chamber. Use of a Heimlich Valve protects the patient from the possible deleterious effects of dirty cabin air.

Procurement

Manufacturer

Notes

1. As with all chest drainage systems used in Aeromedical Evacuation, this unit must be used with a Heimlich Valve.
2. For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.
3. During ascent and descent the changing cabin air pressure forces the water levels to move between the different chambers of the unit. To ensure proper operation, readjust the water level in the water seal and suction control chamber as necessary after each landing.
4. During descent, water from the water seal chamber will move into the collection chamber. This will dilute the patient's fluids which have accumulated and this additional fluid must be accounted for when measuring the patient's output.

Product and Manufacturer

Thora Drain III Underwater Drainage System

Sherwood Medical Co
1831 Olive St
St Louis, MO 63103

Date Evaluated

Jan 1989

Summary

The Thora Drain III is used to remove air and fluid from the patient's pleural cavity; it consists of a collection, water seal, and suction control chamber. Fluid accumulates in the collection chamber while air from the patient's pleural cavity bubbles through the water seal and out of the unit. The water seal separates the patient's collection chamber from the ambient environment. During ascent air in the collection chamber expands and bubbles out of the unit through the water seal. During descent, cabin air bubbles backwards through the water seal into the collection chamber. Use of a Heimlich Valve protects the patient from the possible deleterious effects of dirty cabin air.

Procurement

Manufacturer

Notes

1. As with all chest drainage systems used in Aeromedical Evacuation, this unit must be used with a Heimlich Valve.
2. For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.
3. During ascent and descent the changing cabin air pressure forces the water levels to move between the different chambers of the unit. To ensure proper operation, readjust the water level in the water seal and suction control chamber as necessary after each landing.

Product and Manufacturer

Thora-Klex Chest Drainage Unit

Davol Inc
Div CR Bard Inc
PO Box 8500
Cranston, RI 02920

Telephone:
(800) 556-6275

Date Evaluated

Jan 1989

Summary

The Thora-Klex is used to remove air and fluid from the patient's pleural cavity; it consists of a collection, water seal, and suction control chamber. Fluid accumulates in the collection chamber while air from the patient's pleural cavity bubbles through the water seal and out of the unit. The water seal separates the patient's collection chamber from the ambient environment. During ascent air in the collection chamber expands and bubbles out of the unit through the water seal. During descent cabin air bubbles backwards through the water seal into the collection chamber. Use of a Heimlich Valve protects the patient from the possible deleterious effects of dirty cabin air.

Procurement

Manufacturer

Notes

1. As with all chest drainage systems used in Aeromedical Evacuation, this unit must be used with a Heimlich Valve.
2. For increased patient comfort, ensure that the Heimlich Valve is mounted close to the patient's chest tube.
3. During ascent and descent the changing cabin air pressure forces the water levels to move between the different chambers of the unit. To ensure proper operation, readjust the water level in the water seal chamber as necessary after each landing.
4. The water seal chamber can only be filled using a needle and syringe.
5. Suction applied to the patient is adjusted by turning a "thumb screw". Suction can be accurately delivered, but the "thumb screw" is effected by aircraft vibrations so that the applied suction will vary between 8 and 41 cm H₂O negative pressure throughout the flight.

SECTION VI

1. MEDICAL SUPPLY ITEMS NO LONGER AVAILABLE FROM THE MANUFACTURER.
2. MEDICAL SUPPLY ITEMS NOT ACCEPTABLE FOR USE ONBOARD AEROMEDICAL EVACUATON AIRCRAFT.

Medical supply items no longer available from the manufacturer.

Product

Lanz Endotracheal Tube with McGinnis Cuff

Date Evaluated

September-December 1973

Summary

The McGinnis high-residual-volume cuff with attached control balloon (Lanz endotracheal tube) would be best to use for aeromedical evacuation flights as the attached control balloon will allow fluctuations with altitude and descent, which would not occur with other tubes.

Conventional intratracheal tube cuffs exert increasingly higher pressures against the tracheal wall as the ambient pressure is decreased. Even when properly inflated at ground level, they can be potentially damaging to the trachea at higher altitudes.

Product

Redi-Temp Heat/Cold Therapy System

Date Evaluated

February 1971

Summary

Test results of the thermal characteristics of the various warm and cold packs, using human subjects, showed significant variations from that reported by the manufacturer. This difference may primarily result from variations in test methods and procedures. The significance of the thermal characteristics versus therapeutic value of these units was not ascertained in this evaluation and is relegated to the physician-in-charge and/or the user organization. The warm and cold packs could be easily activated and there was no chemical leakage during storage, activation, and subsequent use. No apparent damage to the warm and cold packs occurred during altitude testing. The solution within the packs was not caustic to the skin. The possibility of attaining the special conditions necessary for these items to create or enhance the danger of a fire or explosion onboard an aeromedical airlift aircraft is extremely remote.

Product

Uni-Temp Single Use Thermometer

Date Evaluated

September-October 1976

Summary

The Uni-Temp Single Use Thermometer is a sterile, disposable unit that can be used to obtain oral temperatures, and with a rectal sheath, rectal temperatures. Under normal conditions, temperature is registered within 30 seconds. It should be stored at temperatures below 87°F (30.55°C). If not, time at normal temperature conditions is required for the recrystallization process of the chemical mixture to occur. The thermometer is available in either Centigrade or Fahrenheit version.

Medical supply items not acceptable for use onboard aeromedical evacuation aircraft.

Cast Cutters

Stryker Cast Cutter Plaster VAC, Model 845
Exceeds EMI limits. Operates only from 115 VAC/60 Hz.

Oxygen Equipment

Blount Oxygen Flow Meter
Incorrect flows.

Closed Urinary Drainage Systems

- a. Abbott Drainbag 2000
Excessive positive pressure in system during rapid decompression.
- b. Travenol Cystoflo II Urinary Drainage Bag
Excessive positive pressure in system during rapid decompression.

END

FILMED

12-89

DTIC